MOTOR AGE

Vol. XXX
No. 19

CHICAGO, NOVEMBER 9, 1916

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MOTOR AGE

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of that month; those received later, start with the first issue of following month.

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ANNOUNCEMENTS

In the issue of Motor Age for November 16 will be given an exhaustive recapitulation of what the 1917 models will embody in the way of steering gears, gearsets and clutches. The changes from previous years will be given and photographs and diagrams will show the important features of these component parts in motor car construction.

An Opportunity for Some Lock Manufacturer

to enter the automobile field with a standard line of automobile locks.

Of late no problem has been given the world of motoring affairs more cause for urgent, definite action than the problem of arriving at some standardized, effective protection against automobile theft.

Anyone entering the automobile lock business should take into consideration the following requirements:

1. A complete line of locks must be manufactured—one for every make of car—bearing in mind that Fords are most frequently stolen.

2. The lock must conform with ordinances operative in most big cities, specifying that the locked car must be movable and steerable but not drivable.

3. A forceful educational advertising campaign must be planned and followed out with persistency if the work of standardization is to be done with economy and dispatch. This campaign at the outset should be concentrated in those motor car publications of greatest influence in moulding the opinion of motordom—MOTOR AGE, THE AUTOMOBILE and MOTOR WORLD.

4. The price of the lock for Ford cars should not exceed $3; the price of locks for other makes of cars should be $5—at which price the largest volume of sales should result.

The tendency in the automobile accessory field is in the direction of standardization. Even automobile upholstery and automobile heaters are becoming standardized. The outlook for standardizing a line of auto locks is promising. Which of the big lock concerns in this country is going to seize this opportunity?

Our Advertising and Merchandising Service Department has considerable specialized information for such a concern. Write for it.

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I AM starting on my fourth year as a Studebaker dealer, and my seventh year as an auto dealer—having had the agency for various lines of cars.

Experience has taught me that a successful dealer is the man who specializes and concentrates on one make of car, and I have selected Studebaker, because first of all the name of Studebaker has, for years, been synonymous with honesty, reliability, quality and progressiveness—all invaluable assets to any dealer.

Secondly, because they have kept their fingers on the public pulse, have always administered to their demands, and can be counted on to produce a "best seller" each year. Thirdly because their business is founded on safe and sound principles which spell "Success" for their dealers as well as for themselves.

CRANSTON & COMPANY

By Earle S. Cranston

Boise, Idaho.

"BECAUSE they have kept their fingers on the public pulse." The phrase is worth repeating for it explains one of the chief reasons for Studebaker success.

Ever since the science of efficient motor car building became an institution with Studeba[illegible] its aim has been to build what the public wanted and build it well. And you see what the steadfast pursuance of that policy has done for Studebaker.

It has earned world-wide recognition for a make of car that is only equalled in quality of materials and performance records by cars costing hundreds of dollars more. It has earned, for Studebaker, the reputation as being the largest producer of medium priced, quality cars in the world.

If you are a Studebaker dealer you know what a tremendous influence that reputation has on the buyer—and the profit it yields. If you are not a Studebaker dealer, in search of a motor car value that expresses itself equally as well on the road as it does in the showroom—then write to

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Vol. XXX No. 19 Chicago, November 9, 1916 $3.00 Per Year

MOTOR AGE

No city possesses such fine examples of typical residences of the changing epochs during the last two centuries as does New Orleans

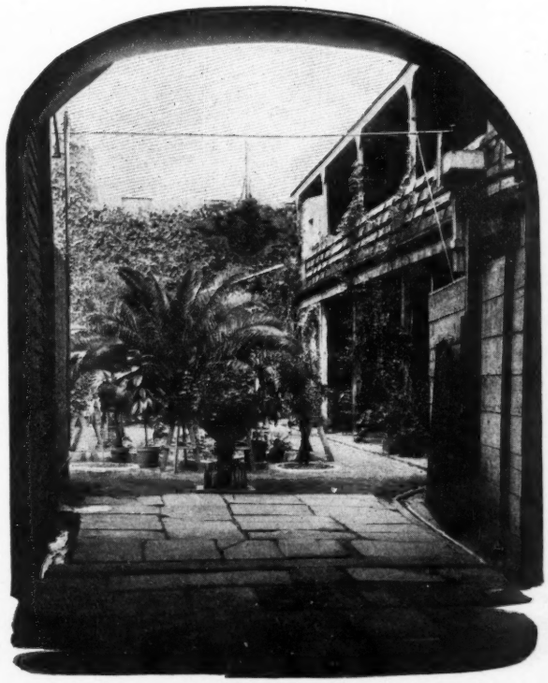
New Orleans—America's Paris

By William K. Gibbs //

In Two Parts—Part I

NEW ORLEANS—before attempting to describe it one pauses to consider the value of impressions. It seems a habit with people in New Orleans to be gay and carefree and the name of the city may almost be said to be synonymous with gayety and pleasure. This spirit which is so prominent in the Crescent City seems to run like a water-mark through the whole history of New Orleans; the early settlers apparently were glad to be free of the depression of their mother country, though how this spirit of levity endured through all of the trials and changes that have marked Louisiana history is difficult to understand.

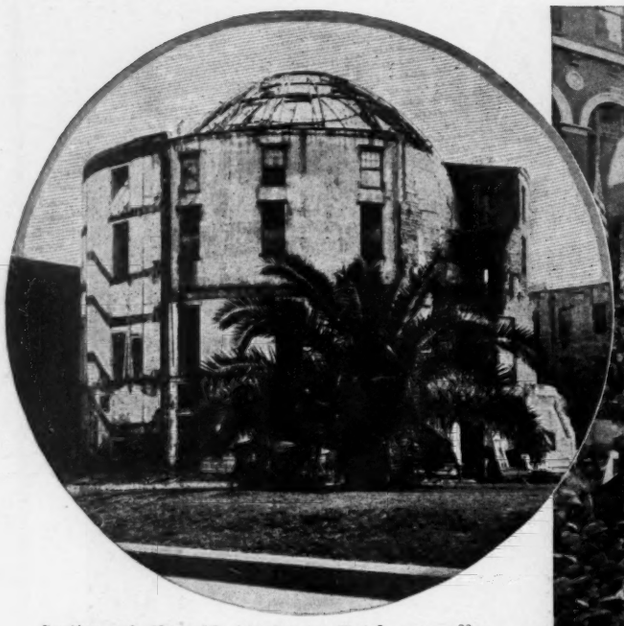
Early New Orleans, and by that I mean to include the city up to the beginning of the twentieth century, did not appear to care about becoming a wealthy city. Up to 1900 it was evident that New Orleans was not enterprising like other American cities, that it lacked the spirit of competition. It was, in fact, too Creole. Quite frequently the city was admonished by political economists that "Anyone who can forego a certain amount of pleasure, can become rich." New Orleans retorted—and retorts are quicker with it than reasons—"that anyone who can forego a certain amount of riches can have pleasure."



The courtyards of the old French homes of New Orleans are fine examples of the garden effect that once afforded privacy and luxury

One is prone to turn back the page of time when they tell of New Orleans, for it seems such an old city when compared with the average American city. Painting a word picture of this historical playground of the South is fraught with many difficulties. Naturally, one wishes to give the reader a clear conception of all the events that have been woven together to make the city what it is—a city as prolific of history as any on the American continent. No story of the length to which this one must be kept can tell all. Don't get the idea that a few days is enough to see this city.

Several flags have waved over New Orleans. Settled by the French, it was later taken over by Spain, then again was under French rule, sold by France to the United States,



Section of the old St. Louis Hotel, once New Orleans' show place, which is being torn down to get rid of rats. Within the part shown slaves were once auctioned and the block where they stood shows the wear of many feet

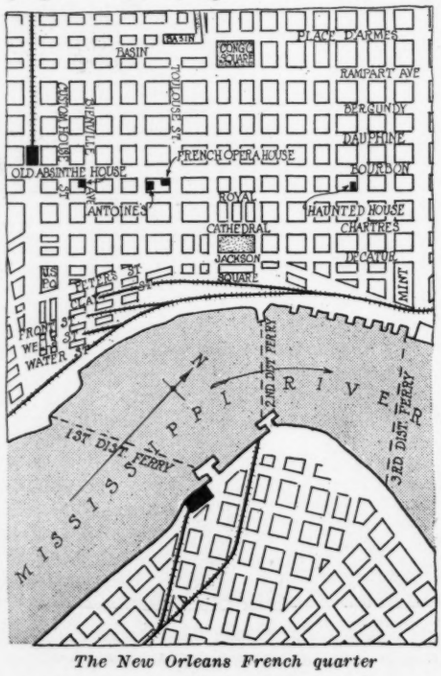
The arrival of the King of the Carnival the day before Mardi Gras. Through custom the King stops at the city hall to secure the keys of the city from the mayor. The royal robes, never worn but once, sometimes cost $5,000 each

then came the Confederate flag and lastly the Stars and Stripes. Many are the vicissitudes that have hindered the growth of the Crescent city. Fires and plagues were frequent in the early days. On Good Friday in 1788 fire swept the city, all commercial houses except three being reduced to ashes in less than 5 hours. The story goes that on account of it being Good Friday the priests refused to allow the fire alarm to be rung because on that day all bells must be dumb. This act was held responsible for the magnitude of the fire. A story of the conflagration is found in the Howard Memorial Library in a copy of the Gazette des Deaux-Ponts.

The many immigrants brought cholera and yellow fever plague. This raged in 1827, 1828, 1829 and up to 1832. In September of 1832 yellow fevor broke out, being reinforced in October of that year by Asiatic cholera. Five hundred died during the first 10 days. In 12 days a sixth of the population was buried. A Protestant minister remained in the cemetery from morning until night administering the last rites. Every means of conveyance available was kept busy taking the dead to the cemeteries. Ministers and Sisters of Charity died standing at their posts and multitudes who began the day in perfect health were corpses before night. Finally came a cessation of the curse, but the following summer the same epidemics returned, killing nearly a thousand people a month for the whole year.

With such calamities as this it seems all the more wonderful that New Orleans exists today. And it is all the more remarkable that today the city is one of the most healthful in the country, statistics showing that the death rate is less than fifteen to the thousand among the white people.

How the people of this city maintained their gayety is a problem when their ancestors were subjected to such punishment as was meted out to them by some of the rulers that were sent over from Europe. A Frenchman named Duroux punished persons on the slightest provocation by stripping them and tying them to trees while



The New Orleans French quarter

the mosquitoes, those voracious mosquitoes of the Gulf, accomplished the rest. Another form of execution was the child of Duroux' cruel mind. Men were nailed in their coffins alive and the coffins were then sawed in two.

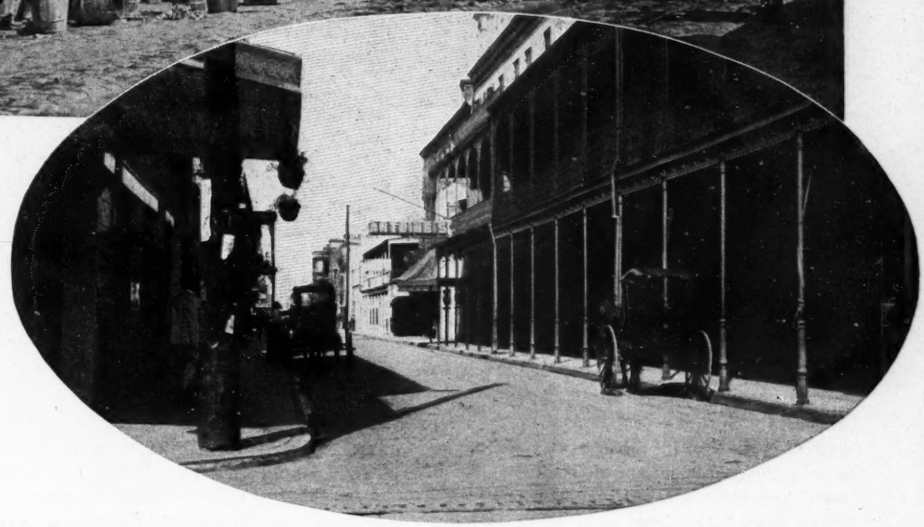
Perhaps these incidents in early Louisiana history will not please the reader. The only reason for giving them is to show the contrast between the past and the present. These incidents took place when America was more barbaric than civilized. Today we find pleasure in delving into the past to learn of those factors that made our history. We like to tread the same paths that the pioneers did and for that reason we will point out some of the old, old places of interest.

Let us assume that you were about to visit New Orleans and that you want to see the historical side first; the modern side can be taken up later. To the visitor the French quarter, "vieux carre," as it is called in French—is naturally the most interesting. It is that part of the city which was developed under the French and Spanish regimes, where one may wander in the region of narrow streets lined on either side with time-worn, old-fashioned, low, stone buildings that are so distinctively of the old world as to make it seem improbable that the tourist is in modern, unromantic America.

In this district there are found the

For a century the old French market has been a center of interest. Sunday morning is one of the biggest market days and now, as in the past, it is the custom for all classes of people to go to market with baskets and procure their vegetables, fish and meat

greater portion of the historical buildings, sites and landmarks. Here are the visual evidences of the past which is easily traceable, step by step through the various epochs in the history of continental United States. It is truly a land apart; a pictorial wonder-book abounding with an inexhaustible supply of innumerable views, traditions and historical narratives. Here, also, are found the beautiful courtyards, embowered in tropical vegetation and flowers, in which are set quaint mansions, interesting antique stores, famous restaurants, odd shops presided over by odd people, who nearly all speak French in preference to English.



This is a typical street of the Vieux Carré. Antoine's French restaurant is on the right. Note the balconies on all the buildings. Well-to-do families of the old type live up stairs over stores and restaurants in the French Quarter

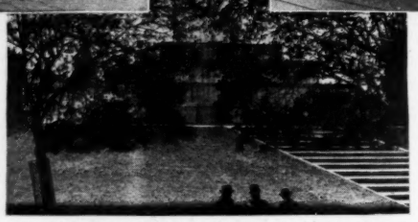
A typical garden courtyard of an old French home in the Latin Quarter, now the business section of New Orleans

In the early days the popular style of American architecture in New Orleans is reflected in this type of building

Nothing is more fascinating than a special journey through the French section to watch the little characteristics, customs and manners of the residents of this transplanted niche from the lands across the sea. Here the tourist may see tacked on the corner post the antiquated, black-bordered, printed death anouncements, milk vendors in their odd-looking two-wheeled carts with two big milk cans in front, are frequently seen. This is the domain of the picayune—a nickel—and the quartee—half a nickel. These are old Creole words still much in evidence. Then, too, there are the unique little shops, always a source of entertainment, for in them one can find many novelties which it is claimed can be had nowhere else in the country.

Among the older buildings in the French quarter none are endowed with greater wealth of tradition and mystery than the Old Absinthe House. It was at one time the headquarters of Jean Lafitte, a sea pirate who later became a Louisiana patriot, of whose valor, prowess and wealth volumes have been written. While on the subject, it might be well to mention that New Orleans drinks a great deal. It has originated a number of artistic concoctions which are legion in New Orleans, but little

This was once the home of General G. T. Beauregard, noted Confederate general and one time superintendent of the United States Military Academy at West Point. About 10 years ago this old home was the scene of a black-hand outrage, wherein three Italians lost their lives



Statue of General Robert E. Lee at the foot of St. Charles avenue. He faces the north, some contending he possessed too much courage to turn his back

The old French Opera House at New Orleans was built in 1856. It has been the scene of many notable operatic performances and Madame Patti made her debut here. French opera has been supported in New Orleans for nearly a century except during the civil war period and the present disturbances in continental Europe

heard of elsewhere. The Old Absinthe House is one of the very few places where absinthe is obtainable in the United States at present, since the importation of it is now prohibited. No one seems to think a visit to New Orleans is complete unless one sees this old building and helps decrease the 17,000 cases of absinthe which were brought over between the time congress passed the law prohibiting the importation and the time the law became effective. If anyone does not believe that drops of water will wear away marble, they have only to look at a fountain on the marble bar of the Old Absinthe House to find that it is true. Under the spigot where the chaser is drawn, the marble is worn away from the constant dripping of the water during the last century to the depth of nearly an inch. Even were the tablet in the corner of this old house removed one would not have to be told that it had seen a century of nature's alchemy.

It is only a short distance from this one-time pirate's den to the Haunted House made famous through the writings of George W. Cable. The traditions of the Haunted House are fascinating and weird. When one is in the French section they should not forget to watch for tunnel-like entrances as they oftentimes lead to characteristic courtyards whose plain exterior gives no hint of the beauties and quaintness hidden behind the outer walls. Perhaps through some of these arched ways vistas may be had of one of the well-kept courts of some of the old, wealthy Creole families who still maintain their residence in this quarter, or it may be a court in the partial state of dilapidation, but still fascinating in its aspect.

One should look up, too, and see how fond of exterior decoration the architects were in those days, for the white cornices under the eaves are usually richly carved and the tiny windows with carved stone or wooden balustrades are sunk artistically into the walls across the window space. There is nothing more noteworthy than the windows of the houses. They are

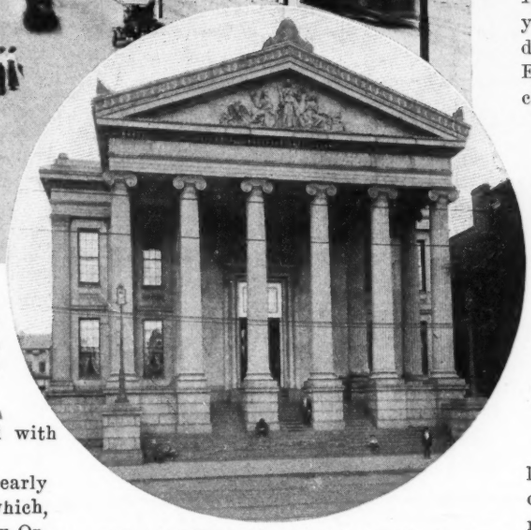
This is one of the relics of New Orleans, where the British general, Pakenham, made his headquarters prior to his battle with Jackson

The street scene was taken near the old French market, a section of the city given over almost entirely to Spaniards, Italians and other Latins. The streets in this neighborhood possess a distinct foreign atmosphere

View of Canal street in the shopping district of New Orleans. Note the width of the street. There are five car tracks in the center and there is ample width both sides for vehicular traffic

round, peaked, and oddly decorated with lattice work.

There is an interesting angle to the early feminine population of New Orleans, which, of course, has nothing to do with New Orleans today, but was a factor in its early development. From the beginning of the colony the emigration of women being always meager, there was a constant appeal to the mother country for that requisite of colonial settlement—wives. The Canadians of tradition, when they married brought their wives with them to Louisiana and many of them had grown daughters, who, naturally, became the wives of the young Canadians, also in good position. The French officers, younger sons of noble families, who could only marry their equals, lived their life of bachelorhood in gay and frolicsome unconcern, the absence of wives being, it is feared, by them considered a dispensation rather than a deprivation. However, for the rough, crude human material in the colony, the hardy pioneers of the ax and hatchet, there could be no possibility of domesticity in their log cabins unless a paternal government came to their aid. Bienville, who is looked upon as the father of Louisiana, asked France to send over prospective wives for the colonists. From time to time the government responded and it was usually a gala day when a girl-freighted ship arrived in the matrimonial haven. When the ship landed the girls were lodged in some house with a sentinel at the door. They were permitted to be seen during the day in order that a choice might be made, but as soon as night fell all access to them was guarded. It was not long before they were married and provided for. It is said that the number of girls never agreed with the number of applicants who presented themselves. The last one left on this occasion became a subject of contest between two young bachelors who wanted to settle it by a fight, although the girl, being the last of the lot, no doubt was anything but beautiful. Usually a compromise was made and instead of fighting the men drew lots.



The classic architecture of the city hall and other public buildings set a standard of design that has been followed for more than a century

Nearly 100 years ago, New Orleans had its first carnival—Mardi Gras. Mardi Gras translates "Fat Tuesday." It always immediately precedes Ash Wednesday, the first day of Lent. The original Mardi Gras occurred when a number of young men, some of them just returned from finishing a Parisian education, organized the first great street procession of masqueraders.

The idea of presenting scenes on floats moving around the street originated in 1857. The carnival celebration of late years has surpassed in extent and grandeur all similar events occurring in either Europe or this country. Besides it the carnivals of the Corso of Rome and the canals of Venice are rather tame affairs, lacking the color and organization with which the Americans have endowed it, Mardi Gras is frequently described, but it must be seen to be appreciated and very few enjoy that privilege once without making an annual pilgrimage to the Crescent city during its festive season.

The Tuesday preceding Ash Wednesday is both the climax and the end of the carnival season. On the preceding Thursday, the Knights of Momus give their street parade, followed by a tableau and ball. On Monday Rex, the king of the carnival, arrives, coming up the river on his private yacht. He is greeted by a naval and military escort, by his knights and retinue and after parading the streets receives the keys to the city. At night the Krewe of Proteus hold their parade with brilliant floats followed by a magnificent ball and tableaux. On Tuesday, which is the real Mardi Gras day, maskers from all parts of the city begin to appear early in the morning. They come on foot, on horseback and on every conceivable sort of conveyance. Dressed in

The historic old Absinthe House, once the pirate den of Jean Lafitte and now one of the few places in the United States where absinthe is sold

garish costumes, they congregate for many impromptu frolics. There are myriads of gray, green, blue and red devils, monkeys, ghosts and ghastly skeletons. Colonial gentlemen pace the streets with masked ladies, who appear to be from the chorus of some light opera. Silent horsemen — night riders, cowboys and jockeys—ride slowly through the streets. Clowns and harlequins make merry and demure ballet girls and Spanish dancers reply tartly to impudent advances.

The streets are thronged with visitors and tourists and the day is one of gayety always long to be remembered. Undoubtedly this feature of Mardi Gras is the most unique entertainment on the continent.

At high noon the streets are cleared and the king rides through the crowds in his royal chariot followed by a long line of beautiful floats. After these disappear the maskers and crowds then take possession of the streets where the reveling continues until sunset. Rex ball is held in the evening. The Mystic Krewe of Comus illuminate the night with their procession of floats followed by a ball and tableaux at the Old French Opera House. The magnificence of these street parades cannot be imagined. For an entire year secret organizations plan and work on the floats that appear.

The celebration of Mardi Gras is an episode that never becomes stale to the people of New Orleans, however monotonous the description, or even the enumeration of its entertainments appears to strangers. At any age it makes the Creole woman young to remember it as she saw it at eighteen; and the description of what it appeared to the eyes of eighteen would be, perhaps, the only fair description of it, for if Mardi Gras means anything it means illusion, and unfortunately, when one attains one's majority in the legal world, one ceases to be a citizen of phantasmagoria.

There is a tradition that the royalties of the carnival show no more satisfactory divine right to their thrones than other royalties; that the kings are the heavy contributors and that the queen's claim upon the council boards of the realm of beauty are not entirely by reason of her personal charm. There is such a tradition, but it is never recognized at carnival time, and seldom believed by the ones most interested; never by the society neophyte of the season. Comus, Momus, Proteus, the Lord of Misrule, Rex, ever find in New Orleans the hearty loyalty of the most unquestioned Jacobinism and the real mask of life never portrays more satisfactorily the fictitious superiority of consecrated individualism in European monarchies than, in the Crescent City do the sham faces show the eternal youth and beauty of the carnival royalties.

If it were granted a New Orleans native in exile to return to the city upon but one day of the year that day would most likely be Mardi Gras. The day is so beautiful that it is a local saying that "it never rains on Mardi Gras."

Jackson square is about 5 minutes' walk from Canal street, New Orleans' main business thoroughfare, and geographically, is the central point and chronologically, the beginning in the sketch of historic New Orleans. The stranger should go down Royal street and then through St. Anthony's alley to Jackson square, once the Place d'Armes, the parade ground of the troops. On the square is the present cathedral and the Cabildo as well as the old court buildings. The St. Louis cathedral ranks as one of the best-known churches in the United States. The site was selected by Bienville when the city was laid out in 1718, but it was not until 1724 that the first brick church was built. The church was repaired and added to from time to time and today is firm and substantial. Many distinguished Frenchmen and Spaniards rest in the crypt. In the rear of the cathedral is a small garden where many duels were once fought.

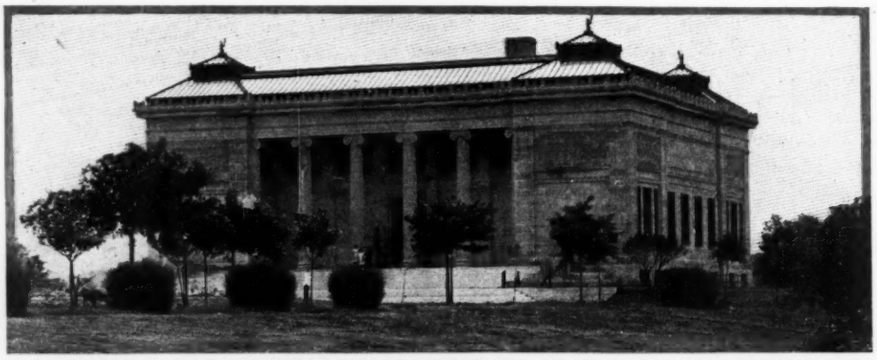
The Louisiana State Museum is now domiciled in the Cabildo and Presbyteré, the most historic buildings in the Mississippi valley. The Cabildo is on the upper side of the cathedral. It was erected during the Spanish regime and here laws were made and here sat executive officers of the Spanish Province—Louisiana. In the main chamber of the Cabildo was enacted the scene of the actual transfer to the United States of the Louisiana Purchase, from which were formed fourteen states of the Union, by representatives of Napoleon and Thomas Jefferson.

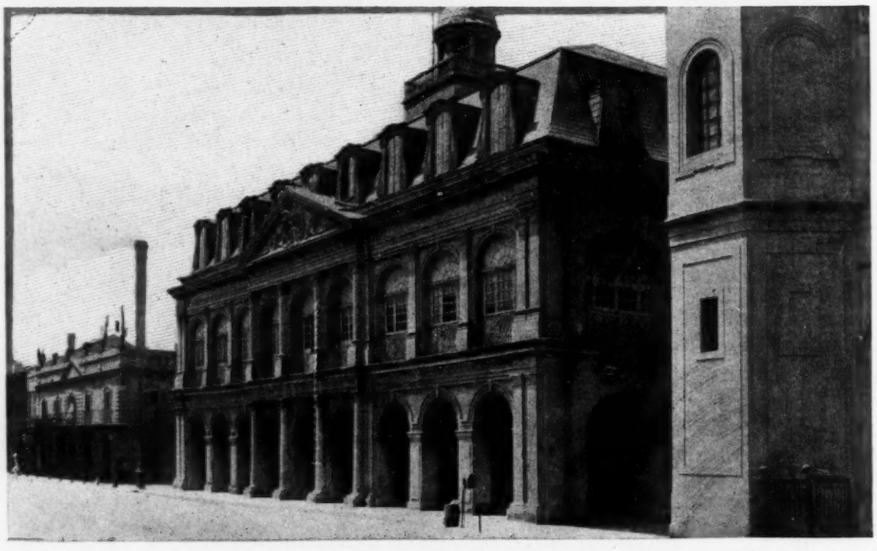
The entrance to the Cabildo is quaint. The Spanish wrought-iron door and the old marble stairway have welcomed many distinguished visitors. Louis Philippe, Aaron Burr, John J. Audubon, Marquis de Lafayette, the Duke of Saxe-Weimer, Zachary Taylor and many other presidents, foreign potentates and distinguished visitors have helped to wear away the much-indented steps.

This building contains the famous Lami painting of the Battle of New Orleans. The Napoleon death mask in bronze, by Bonaparte's physician, Antommarchi, who pressed the matrix to the Emperor's dead face and later presented it to the city is here.

The Presbyteré was the house of the Capuchin priests. It was built a few years after the Cabildo. In later years it was used by the civil courts of New Orleans and now contains exhibits of natural history and agriculture of Louisiana.

(To be continued)





Above is the Isaac Delgado Art Museum in City park. Wealthy citizens of New Orleans long have been noted for such public benefactions as this. Below is one of the Cabildo buildings which now is used as a historical depository by the Louisiana State Museum

Ford Profits Held Up

Dodge Bros., in Suit, Seek to Prevent Investment of Surplus Money

Get Temporary Injunction to Keep Ford From Buying Iron Mines

DETROIT, Mich., Nov. 3—A temporary writ of injunction against Henry Ford to restrain the Ford Motor Co. from distributing and investing its assets that would otherwise be available for dividends, was issued in the Wayne circuit court yesterday.

The plaintiffs, John F. Dodge and Horace E. Dodge, stockholders in the company and also owners of the Dodge Bros. motor car plant, want the accumulation of cash surplus in the form of special dividends.

The cause of the writ, according to the Dodge bill of complaint, was the declaration by Mr. Ford at the end of the last fiscal year, that no special dividends would be declared in the future by the company and that surplus earnings would be used to extend the business.

The announced policy of Mr. Ford to engage in a multiplicity of undertakings was declared in the bill, to be reckless in the extreme and to jeopardize seriously the interests of the stockholders. The bill states that Mr. Ford is engaged in negotiations to invest several million dollars in iron ore mines in northern Michigan or Minnesota, to build ships transporting ore to smelters and to erect steel manufacturing plants "thereby depriving stockholders of fair and reasonable returns upon their investment."

Mr. Ford owns 58 per cent of the capital stock of the Ford Motor Co. The authorized capital stock was placed at $2,000,000 in 1908. John F. and Horace E. Dodge each held 1,000 shares par value $100 at that time. The Dodge brothers contend that though the regular monthly dividends—5 per cent, or 60 per cent a year—are large on the $2,000,000 capital stock, the dividends amount to only a fraction of 1 per cent of the capital actually invested when the surplus is taken into account. They also allege that they have been unable to make any arrangements to discuss the plan with Mr. Ford and that he claims that since the profits are to be represented by investments in plants and capital, the stockholders should have no right to complain. The defendants will be given a hearing to show cause why a permanent injunction should not be granted.

Ford Replies to Dodge Charges

Detroit, Mich., Nov. 6—The present plans of expansion contemplated by the Ford Motor Co. are only in accordance with the past policies of the company. Dodge Bros. have drawn $5,571,500 in dividends from an investment of $10,000 and still have holdings valued at $50,000,000. Political motives are behind the suit against the Ford company. These are statements made by Henry Ford and his attorney Alfred Lucking in their replies to the suit instituted by Dodge Bros.

"At the founding of the Ford business," said Mr. Ford, "the Dodge Bros. invested $10,000, but I don't think any of it was in cash. That was in 1903 and since then they have drawn out dividends amounting to a total of $5,571,500 in cash. Of course they still have a 10 percent interest in the business that is worth, on their own valuation, $50,000,000. Besides that during the life of the company we have paid them more than $27,000,000 in cash for material and parts made for us, on which I believe they made a profit of at least $10,000,000. It is on the profit of these payments and their dividends drawn from the Ford Motor Co. that their present fortune is built."

WANT DUNES A NATIONAL PARK

Chicago, Nov. 6—The roster of National Parks seems likely to include the sand dunes of northern Indiana in the near future. There has been some talk over developing the dune country for industrial purposes but 300 members of clubs and civic organizations met here last week to voice their protest against such an exploitation, at the same time pointing out the natural advantages of this section of the shore of Lake Michigan for a National Park. Stephen T. Mather, assistant secretary of the interior in charge of national parks, conducted a hearing here last week for the purpose of considering the advisability of having the government take the sand dune country over as a park.

LOZIER TO MOVE PLANT

Detroit, Mich., Nov. 3—The Lozier Motor Co. will have completed its removal from the Mack avenue plant to the site formerly occupied by the Warren Motor Car Co. within the next 10 days. The Mack avenue factory will be used by the Rands Manufacturing Co., a member of the Motor Products Co., as soon as it is vacated by the Lozier company.

SHIPMENT RECORDS BROKEN

Detroit, Mich., Nov. 3—American motor car factories shipped 19,510 carloads of machines in October, setting a new record for the month. The previous record was 17,848 carloads, established in October, 1915.

COMMERCIAL BODY ORGANIZED

Detroit, Mich., Nov. 3—The Commercial Auto Body Co., Bay City, Mich., was organized October 29. The company will develop the body business formerly carried on by W. H. Kelly. Mr. Kelly has been making only bodies for Fords but the new concern will make commercial bodies and with the development of the business will erect additional factories.

Rittman Hopes Fade

Canvass of Concerns Fails to Show Method Has Been of Success Commercially

Difficulties in Securing Materials for Stills Said to Be Responsible

DETROIT, Mich., Nov. 4—What has become of the Rittman process? It is not so long ago that the oil fuel world was more or less electrified by the reports that an answer to the gasoline problem had been reached by the use of this form of cracking method. In June, 1916, Dr. Manning, of the Bureau of Mines, issued a statement in which he mentioned the names of twenty refineries that were using the Rittman process, and yet today, it is difficult to discover a single manufacturer who is producing commercially a gallon of Rittman gasoline.

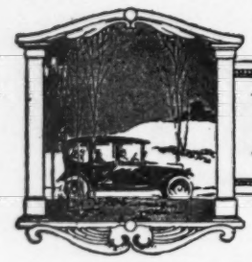
A canvass of the companies which were named at that time as users fails to disclose one who is actually producing and selling gasoline made by the Rittman process, in fact, the majority of them have not even started to operate as they have been unable to secure the materials for the process.

One of these concerns, the Muskogee Refining Co., of Muskogee, Okla., writes: "After careful investigation into cost, etc., we have come to the conclusion that the Rittman process is impractical commercially."

The Pittsburgh Oil Refining Co., often has been referred to as one of the largest operators of a Rittman still, and there is even a general impression among some members of the oil trade that it is using this process regularly. As a matter of fact, the Pittsburgh company states, "The information which has been published to the effect that we are using Rittman process is misleading for the reason that its installation has never been completed owing to the delay in the arrival of materials."

The Pure Oil Co., Minneapolis, Minn., which has been cited as another example, has never installed a plant and probably will not be able to do so for at least 6 months. The Associated Oil Co., San Francisco, Cal., which was said to be using the Rittman process, says in connection with a request for cost figures: "This company is not using the Rittman process and cannot furnish data."

Results from inquiries to every concern mentioned as having used the Rittman process have led to the same negative results. The more or less sanguine hopes held forth for help from this source probably will have to be abandoned, and the natural expedient of kerosene looks to be the only relief. This is being successfully used in tractors where the speed is constant and the next step is the development of the kerosene burning motor car.



EDITORIAL PERSPECTIVES

Engines and the Motorist

MOTOR car engines each year illustrate the tendency of car builders to make their product more easily cared for by the average, everyday motorist who neither has the facilities of a complete repairshop in his garage, nor cares to pay out extravagant sums for skilled labor. The new engines designed for 1917 cars probably illustrate this development among the motor car manufacturers to a greater extent than has been the case before. There have not been many radical changes of design within the past season, manufacturers have not had to develop new types of motors as has been the case in the 2 or 3 years preceding this, and consequently they have been able to give more attention to those details which make the engines easier of maintenance and repair than they have been heretofore.

IN the early days, many of the power plants were easier to take care of than they have been recently, because there was less attempt to make them compact and light, and also less attempt to make them as nearly as possible all in one piece. Also there was not the multiplicity of equipment scattered around the engine that we find today. The manufacturers again are turning their attention to this feature and without sacrificing the gains made in lightness, compactness and quick assembly, have succeeded in arranging the entire engine so that it can be more easily gotten at.

IT has been one of the sad features of the motorists' lot that in a great many engine designs, it sometimes took ten times as long to reach a certain part of the engine as it did to do the actual work of repair or replacement that was required. When labor charges run from 75 to 85 cents it often costs from $5 to $10 for the time necessary to make a 50-cent replacement. Such things as easily-removable cylinder heads and crankcases, and the arrangement of the crankcase so that pistons and connecting rods could be dropped through the crankcase without disturbing the crankshaft bearings has gone a long way toward making such repair items as carbon removal, valve grinding, piston and connecting rod bearing repair much less laborious and expensive. Greater care also in the disposal of the accessories about the motor, such as carbureter, ignition, starting and lighting arrangements, have assisted.

THERE still is a long way to go before engines reach an ideal stage from the repairing standpoint, and motor manufacturers can do no better than make this one of the chief objects in future development for later models of their engines. The V-type engines, in particular, in many cases have need of considerable development work along this line. A number of the car builders and engine makers have taken thought to the question of accessibility in their V-type productions.

Who Will Be the Next?

THAT other motoring publications are lining up with Motor Age in its campaign for the standardization of traffic regulations is an indication of the certainty of the ultimate success of its efforts. The "Northwestern Motorist," a periodical devoted to the interest of motorists in the northwestern states and official organ of the Montana State Automobile and Good Roads Association, has devoted an editorial in its October issue to a comment of Motor Age's traffic campaign and urges its readers to follow the series of articles on the subject in Motor Age. It particularly compliments Motor Age upon the universal road signs which have been suggested, and has reproduced the two warning road signs for "slow" and "danger" which Motor Age suggested editorially. A part of the "Northwestern Motorist" editorial on the subject is reproduced herewith.

"ONE of the national magazines that has taken up the question in a big, constructive way is Motor Age. The series of articles started by this journal a few weeks ago should be read by every one interested in this question.

"MOTOR AGE adds another feature to its campaign. It has suggested a design for universal 'Slow' and 'Danger' road signals. These signs appear to be practical and free from objectionable features of any sort. The Northwestern Motorist believes that such a design would readily be accepted by the Montana State Automobile and Good Roads Association, of which it is the official publication, and has already taken steps to secure some action by the executive committee. If the various state organizations would commence to adopt this design for general use—and this need not interfere with such distinctive state or community markings as might be desired to give individuality to any sectional trail or highway—it would only be a matter of a few months before the habit would spread throughout the length and breadth of the nation. Just a little unselfish boosting will turn the trick. Who will be the next to speak?"

Motorist Vigilantes

THEFTS of motor cars are becoming unwarrantedly common. In spite of the efforts of police departments in their regular line of duty toward the prevention of theft and the apprehension of the thieves, and in spite of the rather haphazard methods of police and circuit judges in sentencing the thieves, these depredations are increasing at an alarming rate. The ease with which a thief may escape with a car makes this an inviting field to the criminal with the proper amount of daring.

THE propensity of justices to be lenient with juvenile offenders in the realm of motor thievery probably has had a great influence in the increase in numbers of this type of criminal. The most of these started as unbidden joy-riders, particularly among the juvenile offenders whose borrowing of the car unknown to its owner was in the nature of a lark rather than any attempt to dispose of the car for gain.

IN earlier days similar conditions in the stealing of horses made it necessary for owners of that medium of transportation to organize vigilance committees to take the punishment of horse-thieves into their own hands, where the forces of law and order were not sufficiently well organized to apprehend and punish the thieves through the regular course of justice. Time was when horse-theft was considered a cardinal crime, even more heinious than murder, and summary justice more often than not was meted out in a hastily organized court of Judge Lynch and the guilty executed on the nearest tree.

MOTOR AGE by no means advocates a revival of these summary methods of pioneer days, but if theft of motor cars continues to increase at its present rate, some more organized effort to abate the evil is a necessity. Motor clubs and other organizations lately have organized vigilance committees to apprehend, to bring to justice and to push the prosecution of motor thieves, with striking results in some sections.

Road Science Develops as Motor Vehicles Increase

ROAD building is developing a new science that calls for the highest engineering skill. The advent of the motor car and truck has brought new problems that must be studied and solved. This statement is made by the good roads committee of the National Automobile Chamber of Commerce.

In Massachusetts 82½ per cent of all traffic on the state highway system last year was motor driven. In New York cars, trucks and motor buses constitute nearly seven-tenths of all wheeled traffic exclusive of street cars and motorcycles. Similar conditions soon will prevail in all parts of the country.

Rapidly changing traffic conditions demand the services of technically-trained men who not only are qualified civil engineers, but who have made a study of road economics and the wearing qualities and cost of construction and maintenance of different kinds of pavements, because the proper administration of road affairs is more essential than the highest degree of engineering skill.

Too often faulty road conditions are due to too small appropriations in the endeavor to make a cheap surface endure under heavy traffic. Where traffic of any consequence exists, the cheapest road to build is usually the most expensive in the end. Efficient highway engineers will save taxpayers millions of dollars in years to come by the selection of proper materials and high-class construction work.

Some of the states and cities require candidates for appointment to the highway departments to pass a civil service examination, thus removing the offices from political influence. This is greatly to be desired. Men who have shown good administrative ability should be continued in office. In the communties where this policy has been followed there is general satisfaction with road and street conditions.

ROAD SUES WRECKED DRIVER

The worm will turn if given time. The Chicago and Eastern Illinois Railroad Co. filed suit against the estate of Harper Daniels, demanding $10,000 damages. On June 3, 1916, at a highway crossing near Bismarck, Ill., Daniels drove his car over the crossing just as the Chicago-New Orleans Limited came along. The car was dragged along the tracks for a distance of 900 feet, until a cross-over frog was reached. This checked the movement of the car and resulted in a jam sufficient to derail the locomotive. Daniels was caught under the wreck but lived a half hour after being removed. Charles Everhart, the engineer, received injuries which caused his death.

Everhart's widow brought suit against the Daniels' estate demanding $10,000, and later, the railroad brought similar action, holding that Daniels approached the railroad crossing without checking the speed of his car and looking in either direction to see if a train was approaching. The damage to the engine, cars, track and delay to the train, was computed to be $10,000. The railroad asks the estate of the car owner to pay this sum. So far as known this is the first case of the kind ever filed.

TIRE HIGHWAYMAN'S LURE

Highwaymen operating in central Illinois are making a specialty of holding up occupants of motor cars at night. They use the lure of a tire placed in the road. The trick has never failed to work and the robbers are reaping a harvest. Drivers of cars at night, seeing the tire and believing it to have been dropped by some car ahead, invariably stop to pick it up. As he is about to place it in his car, the highwaymen emerge from a hiding place convenient and present guns and a command to deliver. The authorities urge tourists traveling at night to go armed.

Words of Prophet of Old Foretells Cars of Today

MOTOR cars have appeared in dreams in all their glory of honking and holding up the traffic, with headlights glaring and engine pushing it through crowds this way and that. No, not in Welsh rarebit dreams, either, for this was way back in 713 B. C., the time of the prophet.

That Nahum, this particular prophet, was convinced of his foresight in this particular is shown in the pasages quoted by a Boston pastor, in support of his contention of the ancient's dream of motor cars. The prophet found himself in a modern city in the midst of many cars. When he awoke he found the old sandy desert. Suddenly the truth dawned; it was a prophecy. And this is what he wrote:

"The chariots shall rage in the streets; they shall jostle one against another in the broadways; they shall seem like torches; they shall run like the lightnings."

See America First • • • See America Now

NO. 97—GRAVE OF DANIEL BOONE AT FRANKFORT, KY.

Here is shown the spot where Kentucky's pioneer lies. The place overlooks the winding Kentucky river, which flows some 200 feet below.

EDITOR'S NOTE—This is the ninety-seventh of a series of illustrations and thumb nail sketches of the scenic and historic wonders of America to be published in Motor Age for the purpose of calling the attention of motorists to the points of interest in their own country.

Houk to United Motors

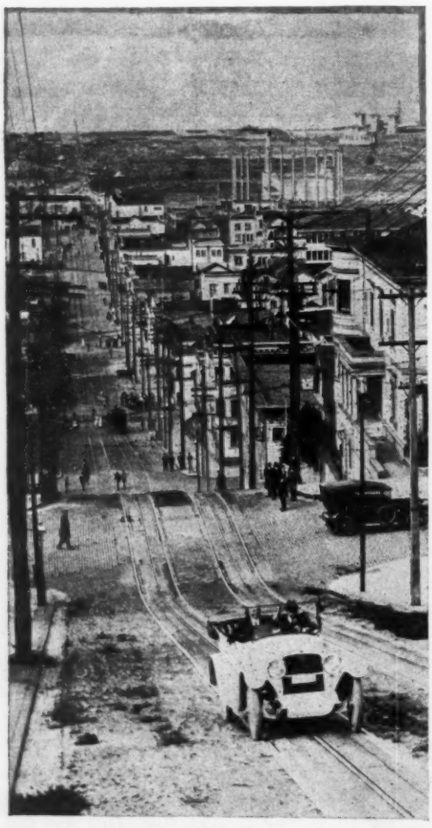
Facilities of Wheel Concern to Be Increased to 4,500 Daily Concern States

Over $1,000,000 to Be Spent in New Buildings and Equipment

BUFFALO, Nov. 6—The Houk Mfg. Co., maker of Houk wire wheels, has been purchased by the United Motors Corp., which brings the total number of concerns owned by this corporation up to nine. As with its previous purchases, the Houk company will continue as a separate manufacturing organization, and Geo. W. Houk, founder of the Houk company, and the one person in the U. S. A. responsible for the present status of wire wheels, will continue as manager.

As with other properties purchased by the United Motors, the Houk Mfg. Co., will be largely increased. There are 500 men at present on the pay roll, but this number will be increased by 300 at once. Previous to November 1 the capacity was 1,000 wheels per day, but it is now up to 2,220, and it will be 4,500 per day by February 1, according to plans.

Approximately $1,000,000 will be expended on new buildings and equipment, the work connected with which will be started at once. The capacity of the plant will be doubled.



Ross eight climbing 25½ per cent grade on high gear.

The progress of the wire wheel in America has been almost entirely connected with the name of Geo. W. Houk. His work in this country started as a licensee of the Rudge-Whitworth company of England. He started manufacture September 23, 1913, and first deliveries were made in February, 1914. Today the company has an account with eighty-five different car makers, and during the last 12 months has averaged approximately 800 wheels per day. The company is at present manufacturing 40 per cent of the wire spokes used in its wheels. The spoke manufacture was started in March, 1915, when Houk purchased the American Spoke and Nipple Co., of Detroit, and moved the factory to Buffalo.

WARNER TRANSFER COMPLETED SOON

Toledo, O., Nov. 3—The transfer of the Warner Mfg. Co. to the Chevrolet Motor Co. of Flint, Mich., will shortly be completed. The name of the concern will be The Toledo Chevrolet Motor Co.

ROSS CLIMBS RECORD HILL

San Francisco, Cal., Nov. 4—Fillmore street hill, a grade running as high as 25½ per cent, has been climbed on high gear by a Ross eight. Never before, it is said, did a car make that grade on high gear. The ascent was undertaken after the Ross eight had successfully negotiated the California street hill from Kerney to Powell streets on high from a standing start. No other car had ever accomplished this feat, according to G. Arnold, of the Ross agency, and with this success he attempted the Fillmore street climb and was successful.

J. H. Stelling, of Arnold, Stelling & Co., northern California distributors for the Ross eight, drove the car, and Ed. Rainey, executive secretary of the mayor, acted as official observer. The gear was chained and padlocked in high by Leon J. Pinkson, motor editor of the San Francisco Chronicle.

War Trucks His Theme

W. F. Bradley, Motor Age Special European Correspondent on Italian Front

Will Tell of Ambulance Unit Performance in Series of Articles

NEW YORK, Nov. 4—W. F. Bradley, European correspondent for Motor Age, is now doing ambulance work with the British ambulance unit on the Italian front, where he has been for several months and where he will be for several months to come. Mr. Bradley is making a very close study of motor truck use in all stages of army work on the Italian front and is very close in touch with transportation matters in general in that zone. When his service with the ambulance unit is completed he will devote his time to a series of articles for Motor Age, covering this field of the work. His work as ambulance driver takes him well to the front, in fact, he is operating most of the time in advance of the Italian artillery. His work is removing the wounded from the front to depots 10 to 20 miles to the rear according to the nature of their wounds.

In this work he has an excellent opportunity of observing the mechanical defects and shortcomings shown by the different makes of vehicles in actual service. The vehicles employed include American, French, Italian, English and German. It is questionable if at any other point in the European war zone that motor vehicles are receiving more severe service. On the Italian-Austrian front there is a combination of mountains, bad roads and extremes of climate which severely tax all motor equipment.

No European war correspondent has had a better opportunity of first-hand study of motor apparatus in the war zone than W. F. Bradley. Besides being a correspondent

MADE-TO-ORDER Hill for Tests—Chicago has no natural hills—so hills have to be made for demonstration purposes. Out near the Yacht Club, the Federal Government is just now engaged in some reclamation work, and has thrown up a crushed rock ridge along the lake shore. The embankment points heavenward at a thirty degree angle. Against this barricade most of cars sold in the Windy City have hurled themselves in an attempt to scale the summit. This shows the Lexington Minute Man six turning the trick.

of the first rank he is an engineer of standing and is familiar with European practice in motor car and truck construction. He is acquainted personally with 75 per cent of the European engineers, has visited each year for several years the majority of the French, Italian and English factories, and has driven over the greater part of these countries

SAFETY FIRST CONVENTION

Baltimore, Nov. 6—The second annual convention of the Safety First Federation of America will be held in Baltimore December 7-9. Among other subjects for discussion are uniformity in traffic regulation, the railroad trespass question, fire prevention and health and sanitation.

KING MAKES RAISE IN PRICES

Detroit, Mich., Nov. 6—The King Motor Car Co. has raised the prices of its products. The sedan selling for $1,900 now sells for $1,950 and the seven-passenger touring car and the three-passenger roadster, both of which were $1,350, have been raised to $1,400. The company announces that there may be an additional increase in the near future.

REORGANIZATION PLAN APPROVED

New York, Nov. 6—The reorganization plan of the International Motors Co. has been approved by the stockholders and creditors, over 93 per cent of the preferred and 94 per cent of the common being deposited with the two committees. A reorganization plan was adopted in September, by which a new company of the same name will be formed to take over the present concern. Additional capital of $1,500,000 was raised and the $2,881,000 notes maturing the first of this month was obliterated.

By this plan the new company's securities will be exchanged on an equal basis for those of the present organization and will consist of $4,381,000 in 7 per cent cumulative first preferred stock, $2,723,000 second preferred and 53,638 shares of common of no par value. Of the first preferred, $2,881,000 is to go to the holders of the notes at par, and the balance will be issued for cash to provide working capital, being offered to stockholders at par with common stock thrown in. Holders of the present $3,600,000 preferred will receive 60 per cent in new second preferred and 10 per cent in new common.

PIERCE TO BE TAKEN OVER

Buffalo, N. Y., Nov. 7—Special telegram —Control of the Pierce-Arrow Motor Car Co. will be taken over by January 1, by J. & W. Seligman & Co., New York bankers, and other banking interests of New York allied with them. George Birge, president of the Pierce-Arrow, will retire from the presidency, being succeeded by Charles Clifton, the present treasurer.

Is Touring Commerce?

Is Motorist Traveling Between States Doing Interstate Business?

Question Will Be Decided by United States Supreme Court

Washington, D. C., Nov. 3—Constitutionality of the New Jersey motor license tax laws, involving taxation powers of states and traffic privileges of non-resident motorists, was argued this week before the United States Supreme Court. The case is that of Frank J. Kane, plaintiff in error, vs. the State of New Jersey. The argument was begun by former United States Attorney General John W. Griggs for the plaintiff, continued by Herbert Boggs for the defendant, and cluded by Charles T. Terry for the plaintiff. Whether states have authority to raise, through motor license taxes, road maintenance revenues, and whether touring is interstate commerce were said to be new and undetermined questions.

The case came up on an appeal by Kane, of New York, from conviction of motoring in New Jersey without paying the registration license. The New Jersey courts upheld the state laws, declaring that the license taxes, though designed to raise revenues, were not unconstitutional, nor, as to nonresidents, a state interference with interstate commerce.

It is expected a decision will be rendered by the court before the holiday recess.

OMAHA SALON A SUCCESS

Omaha, Neb., Nov. 6—The closed car salon, the first of its kind to be held here, has come to a close at the end of its scheduled 4-day run at the Brandeis store, and has been a success. An attendance of over 50,000 may well be taken as a criterion of public sentiment regarding winter driving equipment in motor cars.

In placing the show before the public certain disadvantages were encountered and certain natural mistakes were made, but so much of confidence in the realization of its objects was aroused among those who took part that it is virtually certain the closed car salon will become an annual event in Omaha.

HUPP TOUR ON WAY BACK

Detroit, Mich., Nov. 6—The Hupp capital car is now making its return journey. The party left California October 31 and arrived at Salt Lake City yesterday. They leave there today for Denver. J. S. Patterson, who was taken ill on the journey, is returning to Detroit because of his illness and urgent business.

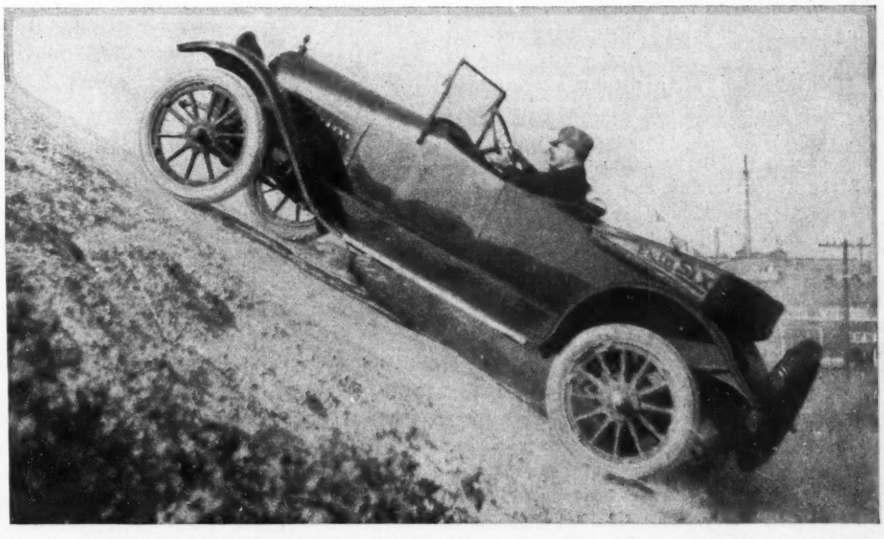
FISHER GETS REGAL PLANT

Detroit, Mich., Nov. 4—The Fisher Body Corp. has purchased the factory of the Regal Motor Car Co. located opposite the main Fisher plant. The Regal unit is already in active operation and with this additional capacity the Fisher Co. is now turning out a large percentage of the closed bodies being used as stock equipment of the manufacturers.

STANDARD REORGANIZATION OFF

Philadelphia, Pa., Nov. 3—The earnings of the Standard Roller Bearing Co. during the last year have shown so much improvement that the proposed reorganization of the company, it is stated, has been practically abandoned. Net earnings for the year ended September 30 last were $747,546.

There are outstanding $2,725,850 common, $572,750 7 per cent cumulative preferred of authorized issues of $4,000,000 common, $3,000,000 first preferred and $1,000,000 second preferred stock.



This shows the Elgin Six climbing the same grade as shown on the opposite side. The city has put a stop to such stunts by making this grade impassable.

A. A. A. Makes Radical Changes

Rules Governing Next Year's Contests Cover Several New Angles

NEW YORK, Nov. 3—At the meeting of the contest board of the American Automobile Assn., last Tuesday, two motor car maufacturers were disqualified and fined for not advertising in accordance with A. A. A. rules as governing performances of cars in contests. The Grant Motor Car Corp., Findlay, O., was disqualified for 1 year, beginning Oct. 1, 1916, for advertising in connection with the performance of its car at the recent Pike's Peak hillclimb. In addition to disqualification for 1 year a fine of $500 was imposed. The disqualification prevents it from competing in sanctioned events during the period stated. The Hal Motor Car Co., Cleveland, O., was given the same punishment for advertising in connection with the hillclimb recently held on Giant's Despair, Wilkes-Barre, Pa. Other cases of advertising not being in accordance with results of contests are being investigated by the contest board, and decisions are expected at its next meeting.

The Kalamazoo Motor speedway, Kalamazoo, Mich., was permanently disqualified due to checks covering cash prizes, etc., going to protest. This is the speedway where the fatal accident happened at its 100-mile race on August 27, in which three men were killed and eleven cars wrecked. The disqualification applies to the officers of the association.

Changes for Betterment

The question of revising speedway rules for the coming year was taken up. Several changes were made in the rules, all preferably for the betterment of racing. The suggestion that more cars, namely forty, be permitted to start on a 2-mile speedway was overruled, and the number of starters in any race will remain as it was this year. The objection to more starters was largely due to the difficulty of scoring greater numbers.

The position of assistant starter was eliminated. A new position known as clerk of the course was created. The clerk of the course will have complete supervision of the track during the race, as well as immediately previous thereto.

The use of judges in connection with races has been discontinued largely because there have not been specific duties for them and too frequently they have gotten on the track and increased the congestion there.

The question of qualifying trials for speedway races has not been satisfactory this year. Speedways have charged admission to spectators for qualifying trials and frequently spectators have spent nearly an entire afternoon without getting any show for their money. This has been due to a few cars presenting themselves for qualification. To avoid this speedways will be requested to have only 1 day for qaulifying trials at which admission can be charged.

Cars will continue to start in races in order of their qualifying speeds. The cars that qualify will only be given one chance, providing they meet the qualifying speed for the race. Should they not show qualifying speed they will be given two additional trials. Cars qualifying after the official date set for trials lose their starting positions which the regular qualifications would have entitled them to.

The board practically accepted many of the recommendations which had been discussed at a recent meeting of the speedway managements, drivers, and the contest board. These included the following:

A—For 1917 no speedway championship events will be for distances less than 100 miles.

B—The minimum purse for championship events will be at the rate of $100 per mile.

C—No sanctions will be issued for Sunday races of any character.

D—In case a race is prematurely terminated due to accident the disposition of prize money rests with the contest board and the referee.

E—All prize money in excess of $5,000 must be in office of contest board not later than 10 days before scheduled date of race. It must be deposited as a certified check or satisfactory bond. Prizes of $5,000 or less must be deposited in cash or certified check with contest board representative not later than 10 days before scheduled date of contest.

F—No driver shall work on his car between the hours of 8 p. m. and 6 a. m. the night previous to a speedway race.

G—Drivers and cars will be assigned 1917 registration numbers according to championship standing in 1916. The car will carry its same racing number throughout the season.

H—Pit supplies must be on the speedway grounds not later than 5 hours before scheduled start of the race and in the pits not later than 3 hours before the start.

I—Speedways will pay the contest board $10 for each car which qualifies and starts in a championship event. The fund so obtained will be added to the championship award fund.

J—The 1917 championship award fund will be divided into five parts. First five drivers must appear at all championship events, unless excused by chairman of the contest board, on certificate from technical representative of board, or from physician.

Numerous other minor changes were made in connection with the rules. One was to the effect that all timing and scoring records of any race must be turned over immediately after the completion of the race to the representative of the contest board or the referee.

Chairman Richard Kennerdell of the contest board has decided to visit California for the Vanderbilt and grand prize races.

UNIONTOWN RACE NOVEMBER 30

Uniontown, Pa., Nov. 6—Several entries have been made for a race to be held on the new speedway which is being built at Uniontown and officials of the course are confident that the track will be ready for the Thanksgiving day meet. One contest is planned to be restricted to cars sold by dealers with establishments within 150 miles of Uniontown. These cars are to carry drivers and mechanics coming within this resident qualification.

The main event will be a non-stock, 300-cubic inch cars and the distance 112.5 miles or 100 laps of the course which measures 1⅛ miles. Prizes of $3,000 divided among the first five to finish will be awarded. Entry blanks have been signed by Billy Chandler, Art Kleine, Barney Newgard, all to drive Crawford cars, Hughie Hughes, in a Hoskins special; Buzane and Devlin, in Duesenbergs and Benedict in a Blue Bird. Prospective entries include Galvin and Lewis in Premiers, and two Olsons, two Harkness Delages, a Cino and a W. H. P.

ELEVEN ENTRIES FOR VANDERBILT

Santa Monica, Cal., Nov. 4—Entries for the Vanderbilt and Grand prize races to be held here November 16 and 18 respectively now total eleven, and information from the East indicates that several more will enter before the time limit is up. Among those who are expected to come are Resta, Aitken, Rickenbacher, Henderson, Wilcox, Mulford, Patterson, Vail and possibly de Palma. The actual entry list to date is:

Car	Driver
Mercer	Unnamed
Mercer	Unnamed
Mercer	Pullen
Mercer	Ruckstell
Mercer	Thomas
Unnamed	Oldfield
Stutz	Cooper
Hudson	Roads
Unnamed	Durant
Hartman	Lentz
Hercules	Agraz

First practice will be held November 9 and continued through the 10, 11, 14 and 15. By making tickets specify that the holder absolved the city of Los Angeles from liability for injury objection to using part of the course within the Los Angeles city limits was overcome.

EXPORTS EXCEED $100,000,000

New York, Nov. 4—Figures just issued by the department of commerce show that 80,658 motor vehicles, valued at $100,258,220, were shipped from the United States during the 12 months ended June 30, 1916. This represents one-fifteenth of all the motor vehicles produced in this country in the

last fiscal year and one-tenth of their gross value, according to estimates of the National Automobile Chamber of Commerce.

There were shipped to foreign countries, not including American possessions, 21,265 commercial vehicles valued at $56,805,548 and 56,234 passenger cars valued at $40,660,263. England, France and Russia took nearly all of the trucks—19,028—and nearly one-quarter of the passenger cars—13,848—or, in all, two-thirds of the total value of the exports. Great Britain and her colonies bought 43 per cent and France and her colonies about 20 per cent. The Philippine Islands and the American possessions, Alaska, Hawaii and Porto Rico, received 4,488 motor vehicles, worth $3,740,145.

Products of American factories went to seventy-eight different countries including Roumania, Switzerland, Serbia, the Azores, Madagascar, French Africa, Tasmania, Korea, Paraguay, Guianas, Nicaragua, Haiti, and the Danish West Indies.

Ninety per cent of all the motor car exports were taken by twelve countries, as follows: England, France, Russia, Canada, Australia and Tasmania, Cuba, New Zealand, Argentina, British South Africa, British India, Philippines and Dutch East Indies.

NEW CHALMERS INCORPORATES

Albany, N. Y., Nov. 3—The Chalmers Motor Corp. formed last week to succeed the Chalmers Motor Co. as a result of the refinancing of the company, has filed articles of incorporation here. The company has 600,000 shares without par value. The directors are Benoni Lockwood, F. A. Gaynor and R. G. Goad.

The Chalmers stock is now on the curb market, having been offered by J. S. Bache & Co. and C. D. Barney & Co. at $35 a share. Common shareholders, according to the new financing plan, will receive for each share held four shares of the new, while preferred shareholders may have their shares redeemed at $115 or exchange on the redemption basis, about 3½ shares of the new for each share held. The new corporation will keep 135,000 shares in the treasury and use 200,000 shares for exchange purposes, net proceeds of the 265,000 shares offered, or more than $9,000,000, will go into the treasury.

TO FINANCE VEHICLE SALES

St. Paul, Minn., Nov. 2—The Security Mortgage Co., this city, has been formed with a capital of $1,000,000 to finance car and truck sales here. It has taken headquarters in the New York Life building and will begin business at once. G. N. Michaud will be in charge of the office. J. N. Storr, president of Kuhles & Stock Co., is president; A. Hirschman, vice-president of the People's Bank, is vice-president; N. P. Rogers, of Rogers & Rogers, live stock dealers, is treasurer and G. N. Michaud, secretary and general manager.

Goodyear Company to Raise Own Cotton

Purchases Tract in Arizona and Will Engage in Growing Egyptian Variety

PHOENIX, Ariz., Nov. 4—In order to obtain a fixed supply of long staple Egyptian cotton, the Goodyear Tire & Rubber Co. has purchased 10,000 acres of land in the Salt River valley, and will at once embark in the business of cotton raising on a large scale. The land was taken over either directly by the Goodyear company or through the medium of a subsidiary corporation, which is reported to be headed by J. M. McDevitt, Pomona, Cal. The land purchased lies just outside the Salt River irrigation project, and will be irrigated by pumping from wells, water being available at comparatively shallow depth, the tract of 10,000 acres lying 4 miles south of Chandler, Ariz., on the south side of the Salt River valley.

It is reported on reliable authority that the Goodyear company is also planning to increase this acreage by leasing from 20,000 to 25,000 acres additional, leases to run for 5 years. Contracts to supply the Goodyear company with long staple cotton have been awarded the operating corporation, the contracts being for a long term of years. It is estimated that over $500,000 will be expended in sinking wells, erecting cotton gins and a cottonseed oil mill for the new plantation. E. W. Hudson, a long staple cotton expert, who was sent to the Salt River valley by the United States Department of Agriculture last year has resigned his position with that department and has been engaged to superintend the growing of long staple Egyptian cotton on the Goodyear plantation.

The average yield of long staple cotton in the Salt River valley is about one bale an acre, three-quarters of a bale being regarded as a conservative estimate. It is now selling at 40 cents a pound on the local exchange.

CAMPAIGN FOR DRIVING COURTESY

Detroit, Mich., Nov. 4—Detroit is going to teach motor car drivers courtesy. The suggestion for a courtesy day, made by James Couzens, police commissioner, and then taken up by W. S. Gilbreath, secretary of the new Detroit Automobile Club, and turned into a courtesy week idea, has been widely approved by motorists. Courtesy on the part of motorists to one another and to pedestrians is the object of the plan.

Mr. Gilbreath intends to take up the matter with other clubs affiliated with the American Automobile Association, suggesting the idea be advertised country-wide.

Commissioner Couzens following his plan for a courtesy day issued a statement to all drivers saying: "Let's all line up for mannerly motor car driving all the time. We could outrival every city in the world and make Detroit famous as the center of motor car production and the seat of correct motor driving. We will all be better off in limb and life—and don't overlook the salient point that the more mannerly you are personally in your driving, the more safety you surround yourself with. That is the real issue—make it a part of your daily life."

The Detroit Automobile Club followed this statement by a publication of what it terms "Detroit's Code of Motor Manners."

—BUT GAS COST MUST BE HIGH

Philadelphia, Pa., Nov. 6—Since the new Philadelphia traffic ordinance became effective various methods have been devised to beat it. One idea in particular shows the inventive genius of the average car owner. Under the ordinance motor cars are not allowed to park in the vicinity of City Hall, but to overcome this chauffeurs encircle the hall continuously until the owner is ready to embark again.

TIRES HALF OF RUBBER GOODS

Washington, D. C., Nov. 6—The production of rubber tires in the United States constitutes almost one-half of the total value of all kinds of rubber goods manufactured during the year. The census bureau has issued a statement of statistics showing that the value of tires is nearly 49 per cent of the total. The Goodyear Tire & Rubber Co., Akron, O., claims to use 10 per cent of the total world's production of crude rubber.

CANADIANS BUYING CARS

Chicago, Nov. 4—Using the wheat quotations of the week as a barometer, the motor car manufacturers who sell machines to the farmers of Western Canada find the outlook most gratifying inasmuch as the bogy of the motor industry—the much discused point of saturation—begins to recede farther into the future. December wheat was quoted at $1.90 last week, nearly twice the figure of some seasons. Canada's war crop of wheat is yielding handsome profits to her farmers, which leads an official of the Grand Trunk Pacific Railway to measure prosperity in terms of motor cars owned, and cars bought this year.

"Farmers are exceedingly prosperous," he states, "and their purchasing power was never so great. Perhaps a striking illustration of this fact, is that approximately $2,000,000 more than in any other year has been expended by the rural population in the purchase of motor cars. In fact, the motor car seems to have become a farm necessity, and even if we are disposed to consider it an extravagance, it certainly adds to the joy of living in the agricultural districts of Canada."

Trade Sidelights of the Week

Anderson Sales Up 141 Per Cent—Smith Company Expanding—Brevities

DETROIT, Mich., Nov. 4—The Anderson Electric Car Co. has had an increase in business amounting to 141 per cent during the fiscal year. Car shipments for 4 months of the current year have been 79 per cent greater than for a similar period in 1915 and it is expected that the company's business for the current year will be 100 per cent greater than last year. Raw material for the construction of cars sufficient to meet so great a demand, already is in the company's plants or under contract for delivery on specified dates. These are facts stated by the company's officials before the annual meeting of the stockholders November 2.

The company's Cleveland plant where motors are made for the Detroit plant and baggage cars and industrial motors are turned out, was reported to show sales for the current year more than 100 per cent greater than for the same period in 1915. Efficiency was displayed in the announcement that although the Detroit plant production increased 141 per cent, the number of workmen had increased slightly less than 100 per cent.

CHANDLER NOW WITH HUDSON

Detroit, Mich., Nov. 3—Billy Chandler is working with Ralph Mulford at the Hudson plant developing Hudson cars for next year. Chandler, during the last year, has been campaigning three Crawford cars on the speedways.

LEAVES CALIFORNIA OVERLAND

San Francisco, Cal., Nov. 4—A. D. Plughoff has resigned the vice-presidency of the Willys-Overland of Cal. Plughoff will again be associated with J. W. Leavitt, handling motor cars on the Pacific coast. He is considered one of the leaders in the trade west of the Rockies and enjoyed a big share of the melon that was cut when the Overland factory bought out the Leavitt company, of which he was vice-president and general manager.

A. O. SMITH EXPANDS

Milwaukee, Wis., Nov. 1—Extensive increases in stock of the A. O. Smith Corp. have been made to care for expansions in factory capacity both under way and in prospect. A banking syndicate composed of: White, Weld & Co., New York and Chicago; Elston & Co., Chicago, and Wm. P. Bonbright & Co., New York, are offering $3,000,000, 7 per cent cumulative preferred stock at 98, and crude dividend with the right to subscribe to 40 per cent of the preferred stock subscription in common, at $35 a share.

The management and control of the A. O. Smith Corp. still remains in the hands of L. R. Smith and there will be no change in the officials of the concern. The business of this concern has been carried on since 1875, and it is stated that the company is earning more than seven times the annual preferred stock dividend, and at the rate of almost $12 a share on the common stock after deducting preferred stock dividends and sinking fund requirements. The company has accepted no war orders.

MADISON BUYS ANDERSON PLANT

Anderson, Ind., Nov. 6—The Madison Motors Co., has acquired the plant of the Anderson Carriage Co., which was once the Rider-Lewis factory and later occupied by Nyberg.

NEW JEFFERY SEDAN

Kenosha, Wis., Nov. 6—The Nash Motors Co. is bringing out a new Jeffery sedan, in two types, a four and six-cylinder, with tops removable for summer touring. The plate glass windows are especially large, the rear window measuring 31 by 19½ inches. Upholstery is gray whipcord. There is a large dome light in the center of the top.

NEW CINCINNATI CAR COMPANY

Cincinnati, O., Nov. 4—The Star Motor Car Co., was recently incorporated with a capital stock of $200,000. Among those interested are Louis Tyroler, David W. Rudisell, J. A. Finn, W. Cayce and William Fischer. The company intends to manufacture a passenger car and has already turned out its first chassis for testing and demonstration purposes.

BALTIMORE PARKING RULES BAD

Baltimore, Md., Nov. 6—Baltimore's new parking law went into effect last week and scores of motorists were arrested in all parts of the city. Action of the mayor in having the police department inforce the law in the manner they did has resulted in a storm of protests. Claim is made by the motorists that the mayor violated his agreement made between the committee from the Automobile Club of Maryland, and the members of the city council, which called for streets to be designated by the board of estimates after consultation with the automobile club on which parking would be permitted.

The law requires that no vehicle of any kind be left standing on any streets during the day longer than 2 hours at a time, nor longer than 3½ hours at night. The biggest objection raised against the ordinance that it effects unfrequented streets of the city as well as those on which the traffic is heavy. Local motorists are willing to aid in keeping the busy downtown streets clear, but so far have not been able to convince the mayor.

NEW DISTRICT SALES PLAN

New York, Nov. 6—The Pennsylvania Rubber Co., will divide the country into districts under special sales directors in order to give more personal attention to the business in various sections of the country. This does not mean that the old branch system has been abolished, but merely that the branches will come under certain districts and sales directors, the latter to be under close supervision by the whole company.

GORDON TIRE PLANS HALTED

Columbus, O., Nov. 3—Owing to the inability to obtain delivery inside of 10 months, the project of J. P. Gordon and others of Columbus to start a tire manufacturing plant is held in abeyance until February, when the question of placing orders for machinery will be decided. Plans for the plant had been prepared, and the drawings for about $75,000 worth of machinery were made.

RICKER HEADS NEW OIL COMPANY

Indianapolis, Ind., Nov. 7—Chester S. Ricker, consulting engineer, was elected president of the Ricker Oil Co., which was recently incorporated at Indianapolis. Associated with him are S. H. Penfield, vice-president of the Salisbury Wheel & Mfg. Co., Jamestown, N. Y., and president of the Peru Auto Parts Mfg. Co., Peru, Ind., as vice-president, and Robt. B. Denham, of Indianapolis, as treasurer.

TWO S. A. E. CHAIRMEN ELECTED

John W. Watson, president of the American Bronze Co., Berwyn, Pa., was elected chairman of the Pennsylvania section of the Society of Automobile Engineers at the annual meeting. Charles S. Crawford, assistant chief engineer of the Premier Motor Corp., has been elected chairman of the Indiana section to succeed J. J. Cole, of the Cole Motor Car Co., who resigned.

Adjusters Swindle Motor Indemnity Company

Cleverly Engineered Frauds Pass Through 2 Years Without Anyone Discovering Them

NEW YORK CITY, Nov. 3—Blandly, nonchalantly, local adjusters of the Globe Indemnity Co.'s motor car claims department have been swindling the concern of thousands of dollars in a period extending back nearly 2 years. The frauds were committed so smoothly that the insurance company's checking experts O.K.'d every settlement recommended by the superintendent of the department. This superintendent and two adjusters, together with four men in New York motor sales offices and repair shops, are now under indictment.

The favorite method of defrauding was to settle a genuine claim generously and take the car as salvage, reporting to the Globe company, "car a complete wreck; worthless junk." The adjuster or the superintendent—perhaps the one who said "divvy" first—would then seize the car as his personal property. In reality he would steal it, but the process of taking possession was so deftly accomplished that "stealing" seems the wrong word. The damaged car would next be delivered to a very friendly repairman in New York City, who would quickly put it in salable condition. Of course, all the proceeds of a sale to a second-hand car dealer or to a motorist went into the pockets of the adjuster or his superintendent.

Account for Repair Man's Friedliness

The friendliness of the repair man has been accounted for by the district attorney. He had a community of interests with the swindlers for, according to confessions already made by two of the adjusters, it was the understanding that all the Globe Indemnity Co.'s legitimate repair work was to be sent to him, in return for which compliment he was to send a monthly check to the personal order of the superintendent for a sum amounting to 10 per cent of his charge for all the work. In addition, he was to repair any of the "personal" cars of the superintendent or his adjusters free.

Another exercise of versatility by the indemnity concern's claim agents was a method only employed when a properly disposed settlement-seeker notified them of an accident to his car. To a certain few who either were dishonest in their claims or who appeared to be potentially dishonest, the adjuster would offer to raise his estimate of the amount of damage, if the owner of the damaged car could split. Two of the adjusters have confessed to dividing this "gravy" three ways—some to the claimant, another share to the superintendent and the last portion to himself.

The fourth method of swindling was to engineer a claim completely—purchasing an antiquated old car, insuring it as new under a fictitious name, then wrecking it, applying for settlement, investigating the claim, even taking a photograph of the wreck—a final and usual step—collecting.

In the investigation already made by the district attorney, it has been found that claims on honestly insured cars were reported, investigated and settled, though the cars never were in an accident and the owners knew nothing of a claim having been made. In these cases the owner's name would be forged to the claim and to the settlement check.

Under indictment now are William E. Ramey, superintendent of motor car claims of the Globe Indemnity Co.; Robert E. Caswell, chief adjuster in New York City; Frank McGinlay, until recently office boy and adjuster; John McGinlay, his brother; Frederick G. Strobel, general manager of the Moon Auto Sales Co., Brooklyn; William Stark, salesman at the Moon Auto Sales Co.; Charles W. Bury of C. W. Bury & Co., mechanic; and Alfred J. Walker, Jr., body builder and carriage maker. Caswell and Frank McGinlay have confessed and pleaded guilty to grand larceny in the first degree.

Among the many amusing instances of fraud was a collision of cars belonging to the McGinlay brothers. Frank, who rose from his office boy estate to be a dashing Broadway spender before his twenty-first birthday, bought two antique vehicles, a Velie and a Princess. These he had insured under two fictitious names. By great effort the two old cars were taken to the McGinlay home near Woodhaven, L. I., and nursed until they were able to creep along more lively. Then Frank and John, by the aid of a hill, staged a thrilling head-on smash. It was great sport, they say. It also was profitable. The Globe Indemnity Co. paid them $1,800 promptly and generously.

Oddly enough the swindling was first made known to District Attorney Swann in letters from motorists who had had satisfactory settlements from the Globe adjusters. They told of the suspicious disposition of their cars by these adjusters.

The first conclusive discovery made was that the Globe company had paid losses twice on a Moon car, first insured by Dr. J. Richard Kevin, of Brooklyn. In an honest accident Dr. Kevin's car was damaged by a collision with a Brooklyn trolley. He was allowed $1,200.

This car, according to Caswell's confession, was then accepted by Strobel, of the Moon Sales Co., as a $750 payment on a new Moon. Now enters Caswell on the scene as tempter and induces Strobel to insure the car as new. Stark put the car in running shape. The policy was issued. A telegraph pole was permitted to graze the side of the car; Caswell reported on Strobel's claim to Ramey; and, says the confession, there was a neat settlement of $1,100 paid to Strobel, of which Caswell and Ramey got $300.

Caswell was first indicted for stealing a Mercer car on which the Globe company had paid an honest claim of $1,200 to Arthur M. Rosenberg, New Haven, Conn. Caswell reported the car as being "worthless junk" and had it put in perfect condition by C. W. Bury, for which he says there was no charge. He used the car for a year and then sold it to Walter Hartley, chemist, Bath Beach, for $525.

Caswell admitted his guilt and declared that he and Ramey had an arrangement with Bury and Walker whereby the adjusters agreed to send all the Globe company's repair work to the two shops. Ten per cent was to be paid secretly to Ramey and Caswell, as their commission, according to the confession, and in addition Bury and Walker were to repair and rebuild all cars sent to them as the personal property of Ramey and Caswell, free of charge.

District Attorney Has Evidence

The district attorney has evidence that Ramey took possession of the Marmon car of Chester A. Marshall, which was wrecked by joy-riders near Woodmanston Inn a year ago, one man and a Winter Garden chorus girl being killed in the accident. Ramey approved a settlement of $2,800 with Marshall, it is said, and appraised the wreck as valueless. Without the knowledge of the company, it is alleged, he had the Marmon fixed and sold it to Roskam-Scott Co., second-hand car dealers, for $900.

Ramey "investigated" a collision on the Boston Post road, between two cars that were both insured by the Globe company. The owners of the two cars deny that their cars were in any such accident or that they ever collected a cent of insurance.

Both Caswell and McGinlay declare that adjusters for all indemnity companies "make money on the side" by framing deals with the insured, by stealing wrecks after appraising them as worthless and by collecting "gravy commissions" from repair shops. Caswell's salary was $110 a month; Ramey's, $135.

It is admitted that since the district attorney first made the investigation public, reports have been coming in to substantiate the statement of Caswell and McGinlay that accident insurance is graft widespread.

Mid-West Neglect in Gas Measuring Standards

Government Bureau of Standards Finds Inspection Methods Deplorably Lax

IN a great part of the state of Illinois—and this condition obtains as well in many of the middle western and southern states—there is practically no effective supervision over weights and measures apparatus, except in the larger cities, according to the report of investigations made by the United States Bureau of Standards and issued by the department of the secretary of state. In many of these conditions are not at all satisfactory, on account of the failure of the communities properly to appreciate the importance of weights and measures work, and to support it with sufficient of the public funds and public co-operation to enable it to be carried on under competent direction, with well trained inspectors and with accurate modern equipment.

In the rural districts of Illinois, and in a very large proportion of the smaller urban districts, no supervision whatever is provided for weighing and measuring apparatus, and no assurance is given the public that their dealings with merchants and tradesmen are upon the basis of correct weight and measure. In other and larger cities, if we except one in which conditions were being rapidly improved at the time of this inspection, the work of inspection and testing of measuring pumps is either not done at all, or but poorly done.

In one city, for example, in which the local sealer had tested and sealed as correct twenty-two measuring pumps, the Bureau of Standards inspector found that but four were correct, the remaining eighteen being incorrect in measurement or otherwise seriously defective. The average shortage of all the pumps in that city was 5.8 cubic inches a gallon, and individual pumps were found to have maximum errors of 41.5, 33.0, and 33.0 cubic inches a gallon, respectively, all in deficiency.

West of Chicago, on the important touring roads, where thousands of motorists replenish their fuel supply, conditions were found to be extremely bad. Dealers were selling gasoline entirely without restriction and giving decidedly short measure.

In no community in which the inspector worked were the local authorities taking action to prevent unauthorized adjustment of measuring pump outfits. Most makers of this apparatus provide their apparatus with simple devices by which the essential adjustments of the pumps, which are used to correct or alter the delivery to standard, can be securely wired in place much like the seals on a freight car to prevent all unauthorized tampering.

It is a well established fact that garage men and dealers often alter the adjustment of their measuring pumps, either to suit some commercial measure they have on hand, which may or may not be correct and often is not, or to insure their "coming out even" in their dealings with the oil companies.

It was found to be surprisingly common among dealers to adjust their pumps not to a standard measure of known accuracy but to such delivery as would enable them to check up all their monthly sales with the amounts charged them by the wholesaler on the basis of his tank wagon deliveries as reported by his driver. Many garage owners admitted that, when they failed to sell as many gallons of gasoline as they were paying for, they at once assumed the measuring pump to be wrong and adjusted it so as to check their apparent sales with their apparent purchases.

A careful study of the conditions reported shows beyond question that it is absolutely indispensable to seal in place all devices which are provided on a measuring pump to alter or adjust the discharge.

It was found that many installations were under conditions which made accurate measurement utterly impossible. In a number of instances gasoline was being pumped and measured from a supply tank located as far as 150 feet from the pump. While gasoline may be pumped this distance it certainly cannot be measured from this distance with the types of so-called "long-distance" piston pump installations in common use. The most usual expedient to avoid this difficulty, where city ordinances require gasoline supply tanks to be set in the alley or outside the building, is to provide an ordinary non-measuring force pump somewhere in the building, arranged to draw its supply from the tank, the tank being set wherever the regulations require. This force pump will deliver into a portable or wheeled tank, or a number of such tanks, and these latter will be used in making the deliveries to customers either at the curb or in the garage. These portable, or wheeled, tanks, if reasonably well maintained and honestly operated, afford the most accurate means of measuring gasoline among all the defined-stroke, piston-type measuring pumps. There are other types of measuring pumps in which the measuring and pumping operations are conducted as separate functions, which are not susceptible to errors arising from long suction lines and conditions of similar sorts.

Manufacturers of measuring pumps are inclined to blame all the known bad conditions on defects of installation, but this position is untenable, as a study of the data in the following paragraphs will prove:

A striking thing about the whole measuring pump situation in Illinois as in almost every other jurisdiction in which to date inspections have been made by the Bureau of Standards, is that there exists a very pronounced and uniform tendency toward the side of deficient delivery. For example, of ninety-six pumps tested in the state of Illinois, exclusive of Chicago, ninety were giving less than exact measure and but six more than exact measure. The average error in deficiency of pumps giving less than exact measure was 7.7 cubic inches a gallon. The average error in excess, of the six pumps giving more than exact measure was but 2.7 cubic inches a gallon. The average error of all

WITH THE U. S. TROOPS IN MEXICO

A supply of extra tires for the truck trains. Goodrich is the make used

ninety-six pumps was 7 cubic inches a gallon in deficiency.

Exactly similar conditions are found even in some localities which are, from a weights and measures standpoint, fairly well administered, and so nearly consistent are the relative magnitudes of short and excess deliveries that it is proved beyond question either that pumps are knowingly adjusted to give short measure or that the supervision of conditions is deficient and incompetent in regularly permitting apparatus to be installed which will tend easily to get out of order. It is well known that nearly all the piston-type, defined-stroke measuring pumps tend toward the deficient side in measurement even though correctly adjusted in the factory.

One conclusion is to be drawn from all this data: Weights and measures inspectors who wish to have measuring pumps in their jurisdiction correct, so that the average unit delivery to the consumer is 1 gallon and not 7 or more cubic inches under 1 gallon, must insist on a strict and unswerving adherence to proper tolerances. The tolerance adopted by the Bureau of Standards allow 1 cubic inch in deficiency and 2 cubic inches in excess a gallon and are amply large to provide for all deviations in reading of any measuring pump of proper type correctly installed, if only the whole range of tolerance allowed be utilized. Moreover, these tolerances are small enough to discourage any one from attempting systematically to take advantage of them.

Pump Deficiency

However, if manufacturers and dealers are permitted to adjust their pumps a little short, still striving however to keep within a tolerance but vaguely defined in the inspector's judgment and perhaps three or four times too large, it is inevitable, says the report, that the average delivery throughout any community will be in deficiency, since it will be possible for anyone of ordinary intelligence and skill to take advantage of the large allowance permitted. Even in one city where the tone of the inspection is fairly competent and the department well equipped, inspectors were inclined to use their judgment and not their code of tolerances and specifications in deciding whether an outfit was to be sealed or condemned.

It is to be emphasized, continues the report, that of seven outfits in one city, which had previously been condemned and which were thereafter supposed to have been put in correct repair and adjustment, ready for reinspection, six were giving less than full measure and but one more than full measure, while the average error of these reinspected outfits was 3 cubic inches in deficiency or three times the tolerance which would have been properly allowed. It is estimated that in but one or two jurisdictions in the United States in which inspections have been made has the average error found by the inspector been even slightly on the side of excess measurement, or close to zero on the deficient side.

License Tag Superstition

Some Ohio Car Owners Balk at No. 13, Others Insist Upon Getting Hoodoo Numeral

Fifty Persons Ask for No. 1—Over Thousand Want Same Number

COLUMBUS, O., Nov. 3—Ohio car owners sometimes are rather finicky about their registration numbers, according to W. H. Walker, the state registrar. Frequently numbers which contain the combination "13" are returned, and quite a few of the superstitious positively refuse any number of this kind.

Then, as if there were not enough trouble for the registrar in disposing of the "13's" fifty persons want to carry No. 1 during the coming year. And the applications for No. 2 are almost as numerous. More than a thousand requests have been received from owners who desire the same number for 1917 as they had in 1916. This seems to be the favorite hobby of motor users—to carry the same number consecutive years.

No. 1 for 1917 goes to J. W. Scott, of Troy, O. No. 13, to so many motorists something to be avoided as much as possible, will be given to Walter Baker, Cleveland, founder of the concern manufacturing the Baker electric. Mr. Baker has carried the hoodoo number on his car ever since the registration law went into effect. Many want 23, the skidoo number, also.

As far as possible, requests of this nature are granted. Former numbers are often reassigned on receipt of a letter asking it. Practically all the numbers containing combinations of 13 are taken back when the owners object, and new tags are issued. The unlucky number is given then to someone who has no objections.

The first carload of 1917 license tags has been received by the registrar, and more are expected regularly from now on. The contracts with the tag manufacturer provides that 150,000 sets of number plates must be on hand by December 20. The 1917 license consists of black letters on a yellow background.

BLAMES LOW REVENUE ON MOTORING

Atlanta, Ga., Nov. 2—The testimony of two officials of railroads operating in the state of Georgia at their appearance before the Georgia Railroad Commission at Atlanta is ample proof of the effect and the extent of the good roads movement in the state. The two men appeared before the commission October 25 and appealed for the privilege of increasing rates on their lines, claiming competition from motor cars had decreased their revenues.

General Manager Stard of the Ocilla-Southern Railroad based his request on "the inroads made on passenger traffic and revenue by the motor car traffic encountered since the construction of the Dixie highway, which parallels the Ocilla-Southern lines"; saying the motor cars threatened to put him "out of business." B. S. Barker, vice-president of the Gainesville Northwestern, a pioneer line into the timber tracts of the mountains, asked for higher freight rates as the motor car traffic was taking thousands of dollars from passenger revenue.

The Georgia Railroad Commission recently issued a rule that holders of unused tickets could not be reimbursed if they had checked baggage and had it transported by rail on such tickets, while they had ridden to their destinations by motor car. The rule was issued upon complaint that such practice was becoming general.

K. C. DEALERS GO ON TOUR

Kansas City, Mo., Nov. 3—The Kansas City Motor Car Dealers' Association made a 6-day tour of northeastern Kansas recently to "talk business" and, moreover, the business of building and maintaining good roads. In every town they were welcomed by crowds, who gathered to hear the speakers. Usually committees met them several miles out of the towns.

Most of the route was over roads which are sections of established highways, but occasionally side trips were made on the less traveled roads. The dealers report prospects among the farmers for larger and better cars, though the performance of the smaller and cheaper cars on the trip caused many to consider them for lighter service and quick trips to town.

Three trucks made the trip, and the farmers and business men of the towns were much interested in them. Each of the truck dealers secured actual prospects and have made plans for going after the rural trade next spring.

PROTEST YOSEMITE ENTRY FEE

Los Angeles, Cal., Nov. 4—Protest has been lodged by an organization of California motorists with Franklin K. Lane, secretary of the interior, against a tax of $5 imposed on each car entering the Yosemite National park. The protest is based on the declaration that the motorists of this state pay more than $2,000,000 annually as state license in addition to an ad valorem tax.

A great deal has been done by concessionaires and others to popularize motor travel to the Yosemite, and this year has seen more cars there than in all previous seasons put together. One camp proprietor has spent liberally in improving roads into the valley at his own expense. The valley is regarded as one of the chief attractions of the state to tourists and the $5 they pay gets them nothing in return other than the privilege of using their own cars instead of patronizing a stage service.

Los Angeles Is After 7 Violators of Speed Law

LOS ANGELES, Cal., Nov. 3—Five police court judges, in a meeting with John L. Butler, Los Angeles new chief of police, admitted in a special session recently that something must be done to bring about a more rigid inforcement of traffic regulations. With a daily average of one killed and several injured as the result of motor car accidents, the authorities have awakened to the public clamor for putting a stop to the startling condition.

The traffic commissioner's court, instituted more than a year ago, and admitted to be a judicial function exercised by the police department will be abolished and all cases will have to go to court. This is supposed to mean an end to squaring and fixing by violators. Law inforcement has been more or less a travesty. The man with a pull has been able to avoid penalties in court, while the motorist without a stand in has had to pay.

There was a period of about 6 weeks during the summer when motor car demonstrations consisted chiefly in breaking intercity records. Several of these runs were completed in the heart of Los Angeles and none resulted in arrests or interference until the grand jury issued a pronunciamieto against them. With new records set and the authorities guaranteeing their permanency against the efforts of competitors to break them, the fortunate dealers sat back, smiled and issued statements of how glad they would be to co-operate in every way.

Almost ever since the traffic ordinances were originated, there have been ways for favored ones to avoid penalties, when hailed into court. Dealers have had their friends in court and they let owners of cars sold by them know about it. When an owner was arrested he would call up his dealer, or go and see him. The result was, he handed over the card notifying him to appear in court at such and such a time. The dealer either appeared for him, was recognized and the case excused or all he need do would be to use the telephone and the affidavit would not be read.

Slow moving public sentiment is aroused now and all of this is to end. This is what Chief Butler has to say:

"Our only ambition is to make Los Angeles streets safe day and night both for the pedestrian and the motorist. A reckless driver is a menace to the man on foot and to every orderly driver of a motor car. More than 90 per cent of the men and women who drive are protectors of the public welfare and upholders of the law. The remainder are as much a menace as a wild man running amuck with a loaded gun. The police want to make these men behave and rely on the judges to make them know and fear the law."

Judge Hugh Crawford declared: "The man who drives recklessly breaks the law as much as the man who steals a pair of shoes and often with less reason. I will treat one like the other in my court. The sane, sensible car or motorcycle driver is not arrested. There is only one other kind of motorist—he is a menace, and his conduct demands preventive measures, restraint and punitive treatment."

And in the additional effort to prevent playing favorites by the police the officers of the motorcycle squad have been notified they must stop borrowing cars. A much abused custom has arisen whereby a motor cop calls upon a dealer and solicits the loan of a car over Sunday, on a holiday or "to take his wife up in the mountains for her health." Of course, the dealer falls for it. He knows if he doesn't every time one of his demonstrating cars is out on the road and a prospective buyer desires to be shown a burst of speed, the driver is going to be arrested and the demonstration will cost the dealer $25. It's cheaper to loan cars.

Advertise Speed Limit

ADAMS, Mass., Nov. 4—The town officials of Adams believe that if they are going to have the speed limit observed the only way to do it in this progressive age is to advertise the fact the same as other commodities are advertised. So in the newspapers of surrounding places has appeared a 50 line double column ad reading as follows: "Notice! Motorists are hereby notified that the speed limit in the town of Adams is 15 miles an hour."

Says Federal Law Is Only Solution

PITTSBURGH, Pa.—Editor Motor Age—It seems to me that we have about as much chance to secure harmony and standardized traffic rules under our present system of state control, as we would have of harmonizing a bunch of cats and dogs. Reciprocity in state laws is only a makeshift and is apt to break down at any time, as witness the case of Maryland, Virginia, and the District of Columbia. Reciprocity is only a palliative and a new legislature can raise havoc with the work at any time.

To provide a real remedy, we should remove the cause. Otherwise we are only triflng and divert energy and enthusiasm which could be better utilized towards securing a Federal law.

Passengers in Pullman cars are classed as inter-state commerce. Why not passengers on rubber tired wheels as well as those who travel on wheels of steel? And how about a motor truck, is not that inter-state commerce beyond any possibility of argument? If we get a Federal law for trucks, we will soon get a Federal law for passenger cars also?

Let us work for a Federal law, and thus achieve something permanent.—Murray Fahnestock.

Milwaukee May Set Aside Park for Parking Space

MILWAUKEE, Wis., Nov. 4—In Milwaukee, little actual progress has been made in the direction of solving the serious problem of parking motor cars in the downtown streets. The common council has been considering for many months a plan to turn Fourth Ward park, one square block at Third, Fourth, Sycamore and Depot streets, fronting on the Union depot, into an exclusive motor car parking square, but this would accommodate only a few hundred cars, when the need is for thousands.

Two years ago a so-called parking ordinance, fixing the limits of an area in the business district in which parking is prohibited, was adopted by the common council. This was the first and last legislation on this subject. The ordinance provides that in the restricted district, no car may stand longer than is necessary to take on or discharge passengers or freight between 7 a. m. and 9 p. m., Sundays and holidays excepted. The area includes Grand avenue and Wisconsin street, from Eighth street eastward to Jefferson street; and the streets for one block north and south of these main thoroughfares. Even 2 years ago the congestion was such that the ordinance was considered only as a measure of temporary relief. Since then the number of cars used in the city has grown enormously, and each day the question of accommodating cars grows more serious. Engineers, city planners and other agencies have proposed remedial legislation from time to time, but no action has been taken.

The city engineer proposes to build elevated platforms along the curb lines of principal streets, of sufficient width for one car standing parallel to the curb, but this method is considered prohibitively expensive. At the rate cars are increasing, it is agreed by all that something must be done during the coming winter to prepare for the rush which will start in March or April, although immediate preparations are in order because the increase in the number of all-winter drivers really lifts the problem from the plane of a seasonable one.

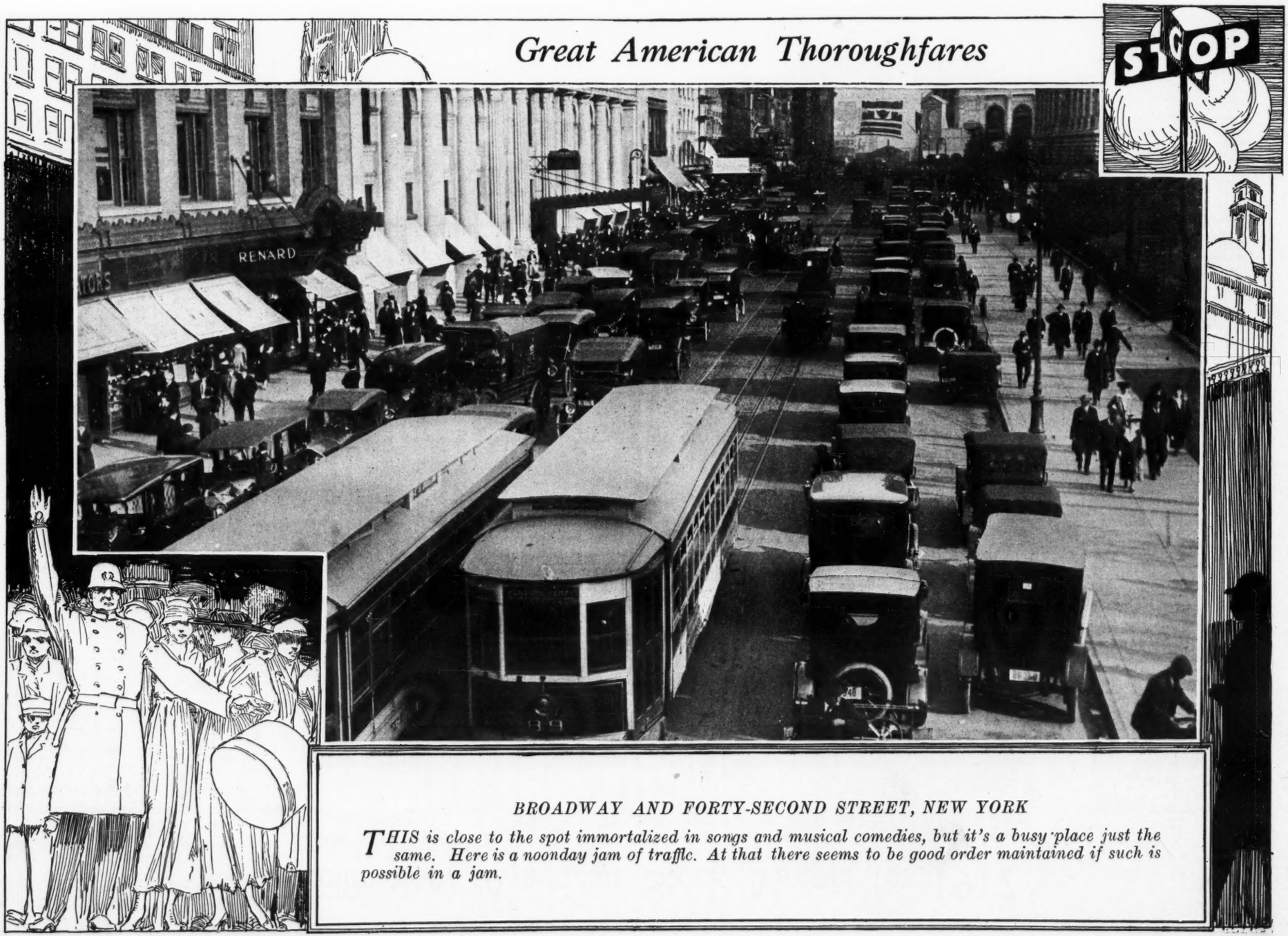
Will Await Final Draft

ABERDEEN, S. D.—Editor Motor Age—Your campaign for uniform traffic laws in all cities of 5,000 population and over meets with our hearty approval, and it will be a pleasure to follow the matter as outlined and covered in your valued publication.

We have in contemplation a new traffic ordinance for our city and are anxiously awaiting a receipt of your final draft in order that we may use it as a foundation for our recommendations.

We are of the opinion that uniform traffic laws will have much to do with future touring and that they will be of double benefit—to the tourist, as one study of traffic regulations will enable him to comply with traffic laws wherever he may be; to the local authorities through the intelligent understanding the regulations may have by the driving public.—Aberdeen Commercial Club.

Great American Thoroughfares



BROADWAY AND FORTY-SECOND STREET, NEW YORK

THIS is close to the spot immortalized in songs and musical comedies, but it's a busy place just the same. Here is a noonday jam of traffic. At that there seems to be good order maintained if such is possible in a jam.

Specifications American Stock Motors for 1917

With Valve and Bearing Dimensions, Lubrication Systems, Etc.

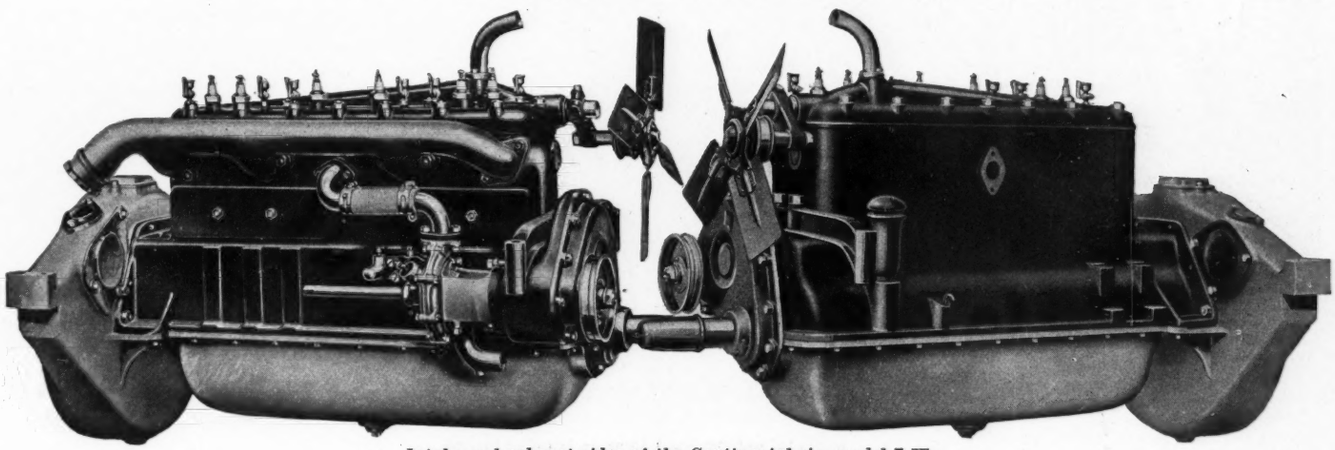
Make and Model	No. cylinders	Piston displacement, cu. in.	Bore and stroke, inches	Cylinders cast	Valves placed	Valve diameter in inches	Valve lift	Piston length in inches	No. motor rings	Weight of piston in ounces	Weight connecting rod, oz.	Length connecting rod, in.	Width wristpin, bearing, in.	Diameter wristpin bearings, in.	Width conn. rod low. end bear'g	Diam. conn. rod low. end bear'g	Diameter crankshaft	Crankshaft bear.	Length crankshaft bearings: Front	1st inter.	2nd	Rear	Intake	Water circulation	Motor lubrication	Material of crankcase	Material of cylinders	Material of piston
Beaver .....ML	4	192.40	3½x5	block	head	1 9/16	9/32	...	3	.....	.....	...	1 5/8	7/8	2	1¾	2	3	2¾	2	...	3⅜	Ext. Man.	Thermo.*	Circ. Spl.	.....	Iron	Iron
Buda .....HU	4	312.00	4¼x5½	block	right	1⅞	7/8	5⅞	3	71¾	96½	12¼	2⅛	1⅞	2½	2⅛	...	3	3⅛	2¾	...	4	Int. Pas.	Cent.	Pres.	Iron	Iron	Iron
Buda .....IU	4	276.50	4 x5½	block	right	1⅞	7/8	5⅞	3	.....	96½	12¼	2⅛	1⅞	2½	2⅛	...	3	3⅛	2¾	...	4	Int. Pas.	Cent.	Pres.	Iron	Iron	Iron
Buda .....RU	4	197.23	3½x5⅛	block	right	1½	3/8	5	3	46	57¾	11¼	1⅞	1 1/16	2	1⅞	...	3	2⅞	2¼	...	3¼	Int. Pas.	Thermo.	Circ. Spl.	Alum*	Iron	Iron
Buda .....YU	4	381.70	4½x6	block	right	2⅛	7/8	6¼	3	98½	119½	13½	2¼	1¼	3	2¼	...	3	3½	3¼	...	4½	Int. Pas.	Cent.	Pres.	Iron	Iron	Iron
Buda .....LSU	6	303.10	3½x5¼	block	right	1½	3/8	5	3	46	57¾	11¼	1⅞	1 1/16	2	1⅞	...	4	2⅞	2¼	2¼	3¼	Int. Pas.	Cent.	Circ. Spl.	Alum*	Iron	....
Buda .....SSU	6	364.48	3¾x5½	block	right	1 11/16	3/8	5	3	55¼	66¾	12¼	2	1	2	2	...	4	3⅛	2½	2½	4	Ext. Man.	Cent.	Circ. Spl.	Alum	Iron	Iron
†Continental ..N	4	192.40	3½x5	block	right	1 47/64	..	3¾	3	.....	50	10¼	1½	1 11/16	....	....	1⅞	3	3½	2½	...	3 3/8	Int. Pas.	Cent.*	Spl. Pres.	Alum	Iron	Iron
Continental ..C4	4	280.60	4¼x5¼	block	left	2	..	5¼	3	.....	.....	11	1¾	1 8/37	....	2	2	3	2⅞	3	...	4 3/32	Int. Pas.	Cent.*	Circ. Spl.	Alum	Iron	Iron
Continental ..E4	4	349.90	4½x5½	pairs	left	1 31/32	..	5⅜	3	.....	.....	12	...	1¼	3	2¼	2¼	3	3 1/8	3¾	...	4 1/16	Int. Pas.	.....	Circ. Spl.	Alum	Iron	Iron
Continental ..7W	6	224.00	3¼x4½	block	right	1 1/16	..	3	3	30	25	8½		7/8	2	1 7/8	1⅞	3	2 14/25	3	...	2 3/32	Int. Pas.	Cent.	Spl. Pres.	Iron	Iron	Iron
Continental ..7N	6	303.10	3½x5¼	block	right	1 1/16	..	3¾	3	.....	50	10¼	11/16	1 1/16	....	2¼	2¼	3	2⅞	2½	...	3 3/32	Int. Pas.	Cent.	Spl. Pres.	Alum	Iron	Iron
Davis .....SD	4	113.10	3 x4	block	right	1⅞	3/32	3	3	28	29½	8	11/16	11/16	1½	1¾	1¾	2	2	...	...	2 1/16	Int. Pas.	Thermo.	Circ. Spl.	Iron	Iron	Iron
Falls .....IT	6	180.20	3 x4¼	block	head	1¼	3/32	3¼	3	28	28	8½	¾	37/50	1⅝	1 1/16	1 1/16	3	2 13/32	2	...	3	Int. Pas.	Thermo.	Spl. Pres.	Iron	Iron	Iron
Falls .....J	6	180.20	3 x4¼	block	head	1¼	3/32	3¼	3	28	28	8½	¾	37/50	1⅝	1 1/16	1 1/16	3	2 13/32	2	...	3	Int. Pas.	Thermo.	Spl. Pres.	Iron	Iron	Iron
Ferro 9	8	198.00	3 x3½	block	head	1¼	1/16	3 3/16	3	.....	.....	7	1¼	⅞	2	1½	1½	3	2 3/32	2¼	...	3	Ext. Man.	Thermo.	Pres.	Iron	Iron	Iron
Ferro 8	8	265.00	3¼x4	block	head	1 3/8	5/16	3 7/16	3	.....	.....	8	1¼	1	2¼	1¾	1¾	3	2¾	2½	...	3¼	Ext. Man.	Thermo.	Pres.	Iron	Iron	Iron
Ferro 13	8	162.00	2 5/8 x3¾	block	head	1 1/16	..	3	3	.....	.....	7	1⅛	37/50	1	1⅞	1⅞	2	2 10/19	...	...	2⅞	Ext. Man.	Thermo.	Pres.	Iron	Iron	Iron
Hercules C2	4	226.40	3⅜x5⅛	block	left	...	...	...	5	.....	.....	...	...	.....	...	.....	...	5	.....	...	...	...	Ext. Man.*	Gear.	Pres.	Iron*	Iron	Iron
Hercules C	4	197.20	3½x5⅛	block	right	...	...	...	5	.....	.....	...	...	.....	...	.....	...	5	.....	...	...	...	Ext. Man.*	Gear.	Pres.	Alum*	Iron	Iron
Hercules .....M	4	276.50	4 x5½	block	left	...	...	...	5	.....	.....	...	...	.....	...	.....	...	5	.....	...	...	...	Ext. Man.*	Cent.	Pres.	Iron*	Iron	Iron
Hercules M2	4	312.00	4¼x5½	block	right	...	...	...	5	.....	.....	...	...	.....	...	.....	...	5	.....	...	...	...	Ext. Man.*	Cent.	Pres.	Iron*	Iron	Iron
Le Roi.....C	4	138.40	3¼x4½	block	.....	1 5/8	..	...	...	.....	.....	...	...	5/8	...	.....	...	...	.....	...	...	...	Ext. Man.	Thermo.	Circ. Spl.	Alum	.....	.....
Light .....H	4	149.30	3¼x4½	block	right	1 3/8	3/32	4	3	28	39	9	1½	¾	2	1¾	1⅞	2	2⅜	...	...	2¾	Int. Pas.	Thermo.	.....	.....	.....	....
Lycoming ...DU	4	165.90	3¼x5	block	right	1 3/8	...	4	3	34	46	9½	1 5/16	⅞	2 3/8	1¾	1¾	2	3½	...	...	3 3/8	Int. Pas.	Thermo.	Circ. Spl.	Iron	Iron	Iron
Lycoming .....U	4	165.90	3¼x5	block	right	1 3/8	...	4	3	34	46	9½	1 5/16	⅞	2 3/8	1¾	1¾	2	3½	...	...	3 3/8	Int. Pas.	Thermo.	Circ. Spl.	Iron	Iron	Iron
Lycoming ..DXU	4	192.40	3½x5	block	right	1 3/8	...	4	3	40	46	9½	1 5/16	⅞	2 3/8	1¾	1¾	2	3⅛	...	...	3 3/8	Int. Pas.	Thermo.	Circ. Spl.	Iron	Iron	Iron
Northway ...108	6	177.00	2 3/8 x4¾	block	head	1 1/16	1/16	3 1/16	3	51	22	9	1¼	2 3/8	1 5/8	1 5/8	1 5/8	3	2¾	1 7/8	...	2 3/8	Ext. Man.	Cent.	Circ. Spl.	Iron	Iron	Iron
Northway ...209	8	246.70	2 7/8 x4¾	block	right*	1 1/16	1/16	3 1/16	4	†63 3/20	†28 3/20	9½	1¼	6/7	...	...	2 1/16	2	3 1/8	...	...	3 1/4	Ext. Man.	Cent.	Pres.	Iron	Iron	Iron
Northway ...309	8	346.30	3½x4½	block	left*	1 1/32	3/32	4 3/8	4	†77	†41	9½	1⅞	6/7	2½	2 1/16	2 1/16	3	3 1/8	3	...	3 1/8	Ext. Man.	Cent.	Pres.	Iron	Iron	Alum
Northway ...308	8	346.30	3½x4½	block	left*	1 1/32	3/32	4 3/8	4	†80	†35	9½	1⅞		2⅛	2 1/16	2 1/16	3	3 1/8	3	...	3 1/8	Ext. Man.	Cent.	Pres.	Iron	Iron	Alum
Rutenber .....T	4	192.40	3½x5	block	head	1 5/8	3/32	3 3/8	3	40	31½	9¼	1¾	⅞	2	1¾	2	3	2¾	2	...	3 1/8	Ext. Man.	Thermo.	Circ. Spl.	Iron	Iron	Iron
Rutenber 38	4	294.00	4½x5½	pairs	right	1 7/8	1/16	5	3	67	67	12	2	1	2½	2⅛	2⅛	3	3½	3	...	4½	Ext. Man.	Cent.	Pres.	Iron	Iron	Iron
Rutenber 25	6	230.00	3⅛x5	block	right	1 1/16	1/16	3 1/16	3	27½	31½	9½	1½	¾	1 1/16	2	2	3	2¾	2¾	...	3 1/8	Int. Pas.	Cent.	Spl. Pres.	Iron	Iron	Iron
Sterling 20	4	120.20	3 x4¼	block	head	1¼	3/32	3 3/8	3	24	24	7⅞	1½	37/50	1½	1 9/16	1 9/16	2	3	...	...	3	Ext. Man.	Thermo.	Circ. Spl.	Iron	Iron	Alum*
Teetor .....H	6	230.10	3⅛x5	block	right	1 3/8	1/16	3 7/16	4	27	47	9½	1	1	1 1/16	1 7/8	2	3	2¾	2½	...	3	Int. Pas.	Cent.	Spl. Pres.	Iron	Iron	Iron
Teetor T17	6	572.50	4½x6	block	opp.	2 1/16	3/32	5	4	58	58	12½	1½	1	1 7/8	1 7/8	2	4	4	1¾	1¾	4	Int. Pas.	Cent.	Spl. Pres.	Alum	Iron	Iron
Waukesha ..TU4	4	202.00	3½x5¼	block	right	1 3/8	1/16	3 7/8	3	41	66	10⅝	2	1	2 1/16	2	2	3	2½	2½	...	3	Int. Pas.	Thermo.*	Circ. Spl.	Iron	Iron	Iron
Waukesha ....B	4	231.90	3¾x5¼	block	right	1 3/4	1/16	3 7/8	3	46	90	11½	2	1	2 1/4	2	2	3	2¼	2½	...	3	Int. Pas.	Cent.*	Circ. Spl.	Alum	Iron	Iron
Waukesha .....R	4	327.00	4¼x5¾	pairs	right	2	1/16	5¼	3	80	76	11½	2⅛	1¼	2½	2	2	3	2 1/16	3¼	...	3½	Ext. Man.	Cent.	Circ. Spl.	Alum	Iron	Iron
Waukesha ....M	4	430.00	4½x6¾	pairs	right	2 1/16	3/32	5 5/8	3	90	94	12¼	2¾	1½	3	2	2	3	3½	4¼	...	4½	Ext. Man.	Cent.	Circ. Spl.	Alum	Iron	Iron
Weidely 4.....D	4	211.60	3½x5½	block	head	1 7/8	1/16	4 3/4	3	38½	73	11	2	7/8	2¼	2	2 1/8	3	2½	2½	...	4	Ext. Man.*	Cent.	Spl. Pres.	Iron	Iron	Iron
Weidely 12....C	12	390.00	2 7/8 x5	three	head	1 1/8	1/4	3½	3	22	41½	10	1 5/8	5/8	1 5/16	2	2 1/8	3	2½	2¾	...	4	Int. Pas.	Cent.	Spl. Pres.	Alum	Iron	Iron
Wisconsin .....J	4	449.60	5 1/10x5½	pairs	opp.	2¼	5/8	6	3	103	106	12	3	1 3/16	3½	2	2	3	3½	3½	...	4	Ext. Man.	Cent.	Pres.	Alum	Iron	Iron
Wisconsin ...JU	4	449.60	5 1/10x5½	pairs	opp.	2¼	5/8	6	3	103	106	12	3	1 3/16	3½	2	2	3	3½	3½	...	4	Ext. Man.	Cent.	Pres.	Alum	Iron	Iron
Wisconsin .....A	4	389.90	4⅜x5½	pairs	opp.	2¼	5/8	6	3	96	106	12	2¾	1 3/16	3½	2	2	3	3½	3½	...	4	Ext. Man.	Cent.	Pres.	Alum	Iron	Iron
Wisconsin ...AU	4	389.90	4⅜x5½	pairs	opp.	2¼	5/8	6	3	96	106	12	2¾	1 3/16	3½	2	2	3	3½	3½	...	4	Ext. Man.	Cent.	Pres.	Alum	Iron	Iron
Wisconsin ...QU	4	166.00	3¼x5	block	left	1½	1/16	3¾	2	34	44	10	2⅛	⅞	2	2	2	2	3	...	...	3½	Int. Pas.	Thermo.	Circ. Spl.	Iron,	Iron	Iron
Wisconsin ...TU	4	302.00	4 x6	block	left	2	1/16	5 1/4	3	59	85	12	2½	1 3/16	3	2	2	4	2½	2½	2½	3½	Ext. Man.*	Cent.	Pres.	Alum	Iron	Iron
Wisconsin ...UU	4	341.00	4¼x6	block	left	2	1/16	5¼	3	80	85	12	2¾	1 3/16	3	2	2	4	2½	2½	2½	3½	Ext. Man.*	Cent.	Pres.	Alum	Iron	Iron
Wisconsin ....D	4	606.00	5¼x7	pairs	opp.	2 3/8	3/8	7	4	128	148	14	3½	1 7/16	3½	2 3/8	2 3/8	3	4	4	...	6	Ext. Man.	Cent.	Pres.	Alum	Iron	Iron
Wisconsin ....M	4	727.00	5¾x7	pairs	opp.	2 5/8	3/8	7	4	156	148	14	4	1 7/16	3½	2 3/8	2 3/8	3	4	4	...	6	Ext. Man.	Cent.	Pres.	Alum	Iron	Iron
Wisconsin ....K	6	909.00	5¼x7	pairs	opp.	2 3/4	3/8	7	4	128	148	14	3½	1 7/16	3½	2 3/8	2 3/8	4	4	4	4	6	Ext. Man.	Cent.	Pres.	Alum	Iron	Iron
Wisconsin .....P	6	1090.00	5¾x7	pairs	opp.	2 5/8	3/8	7	4	156	148	14	4	1 7/16	3½	2 3/8	2 3/8	4	4	4	4	6	Ext. Man.	Cent.	Pres.	Alum	Iron	Iron

Abbreviations:—Opp., Opposite; Ext. Man., External Manifold; Int. Pas., Internal Passage; Cent., Centrifugal Pump; Thermo, Thermo-Syphon; Circ. Spl., Circulating Splash; Pres., Pressure; Spl. Pres., Splash Pressure; Alum., Aluminum; Gear, Gear Pump.

*Optional. †With forked rod—blade rod lighter.

Better Motor Value in New Engines

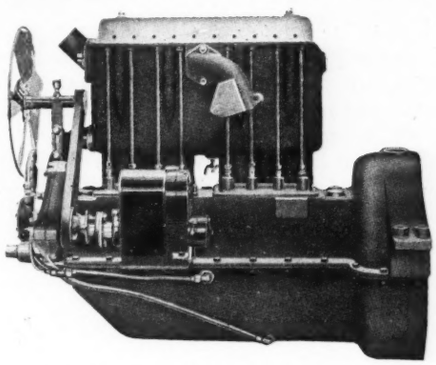
Improved Handling of Present-Day Fuels—Greater Accessibility, Longer Life and Increased Economy Obtained in Stock Products for 1917 Cars



Intake and exhaust sides of the Continental six, model 7 W

BUYERS of 1917 assembled cars are getting engine value that has never before been approached in stock products. During the last two years the improvement in powerplant design and construction has covered more ground than during the previous decade and the gasoline unit of today stands as a triumph of efficiency, economy, accessibility and life.

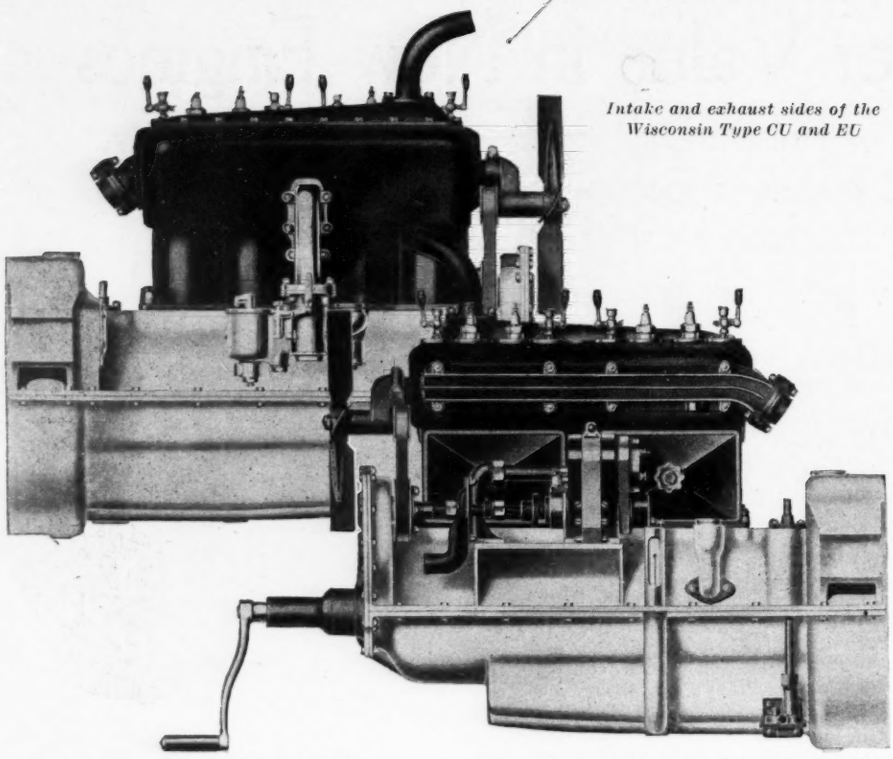
With all that has been accomplished, there has been nothing radical developed in the last 2 years. Since the introduction of the V engine, our list of powerplant types seem to have been completed as far as motor cars are concerned and those designers whose work inclines towards the radical, have entered new fields, such as aeronautical engines. On the other hand, however, some of the results that have been accomplished by changes of detail are far beyond what would be believed possible. Little alterations in the gas passages, and changes in the design of piston and other running parts have produced an increase in power output that raises the stock gasoline engine to a new level of efficiency.



Exhaust side of the Beaver four, type MLC, showing the overhead valve operation and cover

To bring the fact home to the car user it is only necessary to state that if all the 1917 engines could be brought together and compared with a similar product of a year ago, the driver would find that for

Car and model	Make motor	Cyl.	Bore	Stroke	N.A.C.C. rating
Abbott, 6-44	Continental	6	3¼	4¼	25.35
Anderson, 6-40	Continental	6	3¼	4¼	25.35
Argo, 17	Massnick	4	3⅛	4	15.63
Auburn	Teetor	6	3⅛	5	23.44
Austin, King H-wy	Weidley	12	2⅞	5	39.68
Bour-Davis, 1917	Continental	6	3¼	4½	25.35
Briscoe, 8-38	Ferro	8	3	3½	28.8
Chevrolet, 490	Mason	4	3⅛	4	21.5
Chevrolet, F5-F2	Mason	4	3⅛	4	21.5
Cole, 860	Northway	8	3½	4½	39.2
Crow-Elkhart, CE-35	Lycoming	4	3½	5	19.6
Daniels, A	Herschell-Spillman	8	3¼	5	33.8
Davis, Light Six	Continental	6	3¼	4½	25.35
Davis, Big Six	Continental	6	3½	5¼	29.4
Dispatch, G	Wisconsin	4	3¾	5	22.5
Dixie Flyer, 1917	Lycoming	4	3¼	5	16.9
Drummond, 8	Herschell-Spillman	8	3	5	28.8
Elgin	Falls	6	3	4¼	21.6
Glide, Light Six 40	Rutenber	6	3⅛	5	23.44
Grant	Falls	6	3	4¼	21.6
H. A. L.	Weidley	12	2⅞	5	39.68
Halliday	Rutenber	6	3⅛	5	23.44
Hollier, 186	Falls	6	3	4¼	21.6
Howard, 1917	Continental	6	3¼	4½	25.35
Inter-State	Rutenber	4	3½	5	19.16
Jackson, Wolverine	Ferro	8	3	3½	28.8
Jones, 26-B	Lewis	6	3½	5¼	29.4
Kline Kar, 6-38 Series F	Continental	6	3¼	4½	25.35
Lambert, 90	Rutenber	4	4¼	5¼	28.9
Lambert, 80	Continental	6	3¼	4½	25.35
Lexington, 6-P	Continental	6	4⅛	5¼	40.84
Lexington, 6-O-17	Continental	6	3¼	4½	25.35
Liberty Six, 10-A	Continental	6	3½	4½	23.44
Luverne, 17	Continental	6	3¾	5¼	33.75
Madison	Rutenber	6	3⅛	5	23.44
Madison, 8	Herschell-Spillman	8	3¼	5	33.8
Malbohm, 17	Massnick	4	3⅛	4	15.63
Marion-Handley, 6-40-A	Rutenber	6	3⅛	5	23.44
Marion-Handley, 6-60-B	Continental	6	3½	5¼	29.4
McFarlan, 1917	Teetor	6	4½	6	48.6
Meteor	Weidley	12	2⅞	5	39.68
Monroe, M-3	Sterling	4	3	4½	14.4
Moon, 6-43	Continental	6	3¼	4½	25.35
Moon, 6-66	Continental	6	3½	5¼	29.4
Moore, 35	G. B. S.	4	3¾	4¼	22.5
Murray, 70-T	Herschell-Spillman	8	3¼	5	33.8
Napoleon, 30	Lycoming	4	3½	5	19.6
Oakland, 34	Northway	6	2⅞	4¾	19.5
Oakland, 56	Northway	8	3½	4½	39.2
Olds, 45	Northway	8	2⅞	4¾	26.45
Overland, 85	Continental	6	3¼	4½	25.35
Paige, 6-46	Continental	6	3½	5¼	29.4
Paige, 6-38	Rutenber	6	3⅛	5	23.44
Partin-Palmer, Twenty	Le Roi	4	3⅛	4½	15.63
Paterson, 6-45	Continental	6	3¼	4½	25.35
Pathfinder	Weidley	12	2⅞	5	39.68
Pilot, 6-45	Teetor	6	3⅛	5	23.44
Princess, 4-36-F	G. B. S.	4	3¾	4¼	22.5
Pullman, 424-32	G. B. S.	4	3¾	4¼	22.5
Roamer	Rutenber	6	3 1/16	5	24.1
Ross, C	Herschell-Spillman	8	3¼	5	33.8
Saginaw, 1917	Massnick	8	3⅛	4½	31.25
Saxon, B-5-R	Continental	4	2¾	4	12.1
Saxon, S-4	Continental	6	2⅞	4½	19.84
Scripps-Booth, D	Ferro	8	2⅞	3¾	22.05
Scripps-Booth	Sterling	4	3	4¼	14.4
Singer, 17	Herschell-Spillman	6	4	5½	38.4
Standard, E	Herschell-Spillman	8	3	5	28.8
Standard, F	Herschell-Spillman	8	3¼	5	33.8
Stephens, 60-65	Continental	6	3¼	4½	25.35
Stutz, R	Wisconsin	4	4¾	5½	36.10
Sun, 17	Beaver	6	3½	5	23.44
Velie, 27	Continental	6	3½	5¼	29.4
Velie, 28	Continental	6	3¼	4½	25.35
Westcott, S-17	Continental	6	3½	5¼	29.4
Yale	Massnick	8	3⅛	4½	31.25



Intake and exhaust sides of the Wisconsin Type CU and EU

an equal size unit he could travel slower on high gear, travel more rapidly on high gear, travel further on a gallon of fuel, climb steeper hills with less effort, make repairs in shorter time, and at the end of several thousand miles service have an engine that remained more quiet and which was further removed from the eventual scrap heap.

In other words the engine of today is more flexible, economical, powerful, accessible and longer lived than its predecessor of a year ago. How these results have been accomplished forms an interesting story that clearly brings out the reward of patiently going into the smallest details of engine construction for the purpose of gaining a little in each spot towards the ultimate aim of perfection.

Methods of Improvement

Most of the improvements which have made the engine of 1917 more powerful and efficient have to do with increasing the amount of charge taken into the cylinder on each stroke. The powerplant of today takes in more charge on a stroke than ever before. The actual way in which this has been accomplished has been in the smoothing out of the intake passages. This has been given a great amount of attention by designers and although every one has not changed during the year, there has been a general cleaning up in this respect. The tendency to shorten the intake manifold, which has been noticed in engines for some time, has been increased and the result is shown notably in the growth of the integral intake passage. In this, the passage is cast directly into the cylinder block and the carburetor bolts directly against the wall of the cylinder.

Another factor that has caused this increase in integral intake passages is the necessity for security high temperatures to aid in the vaporization of the fuel. The ever-dropping quality of gasoline has reduced the engine practically to a kerosene-burning unit. In fact, during the last year, the increase in tractors which use kerosene for fuel has brought this matter through a process of development where it is perfectly feasible with only slight changes. There is little difference structurally between the tractor engine and that intended for the passenger car. The difference is largely in piston speed and heaviness of parts.

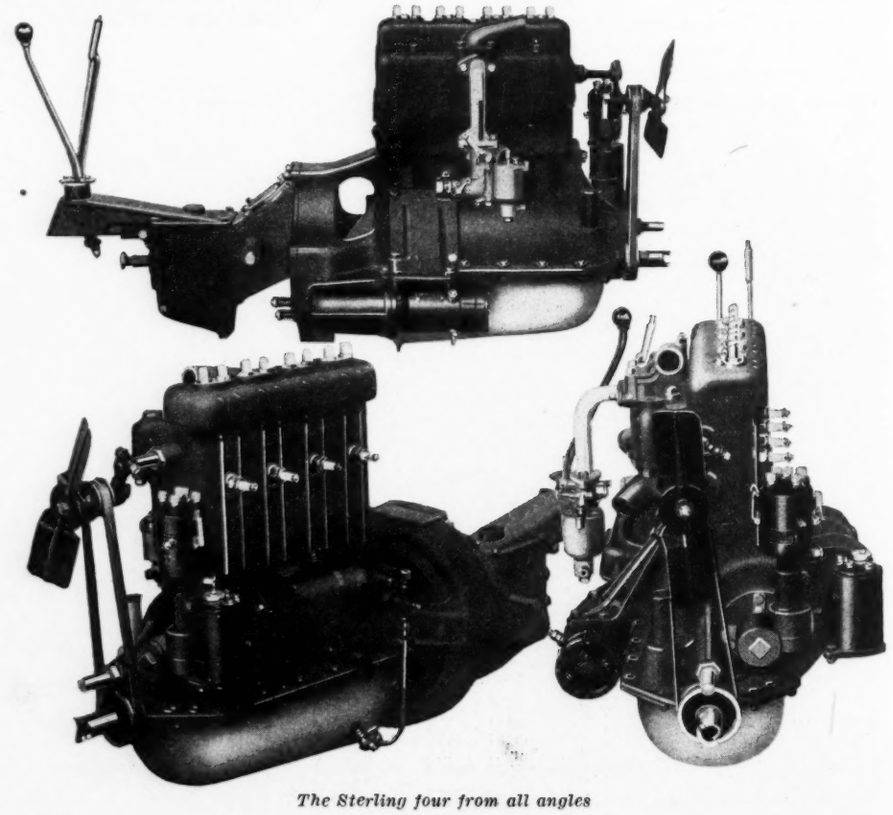
The higher temperature of the intake gases is not a factor in aiding the volumetric efficiency, but on the contrary is against it, because the gas is expanded while hot; nevertheless, the engines for passenger-car work have more than compensated for the increased expansion by the improved part design.

Movement Toward Larger Valves

For some time there has been a movement toward larger valves. These seem to have gone as far as they can now, the only pertinent question that arises in this is whether or not we are going to come to making the intake larger than the exhaust valve. One motor company already does this. The Sterling has a 1¼-inch intake and a 1⅛-inch exhaust valve. This is solely for the sake of opening a wider passage to be sure to fill the cylinder.

Behind most of the development of the engine is the demand made by the driving public for great flexibility. Economy also has been demanded, but this is entirely secondary and even on the lower price cars a speed range of from 4 to 50 miles an hour on high gear has been required. The most obvious result of this requirement is in the higher speeds at which engines must run. The speeds have been mounting each year, but during 1916 results have been obtained that are far beyond what was hoped for 3 years ago.

High speeds of the piston mean naturally a quicker renewal of the explosive mixture and consequently the higher volumetric efficiencies again enter and the clean intake with large unrestricted passages



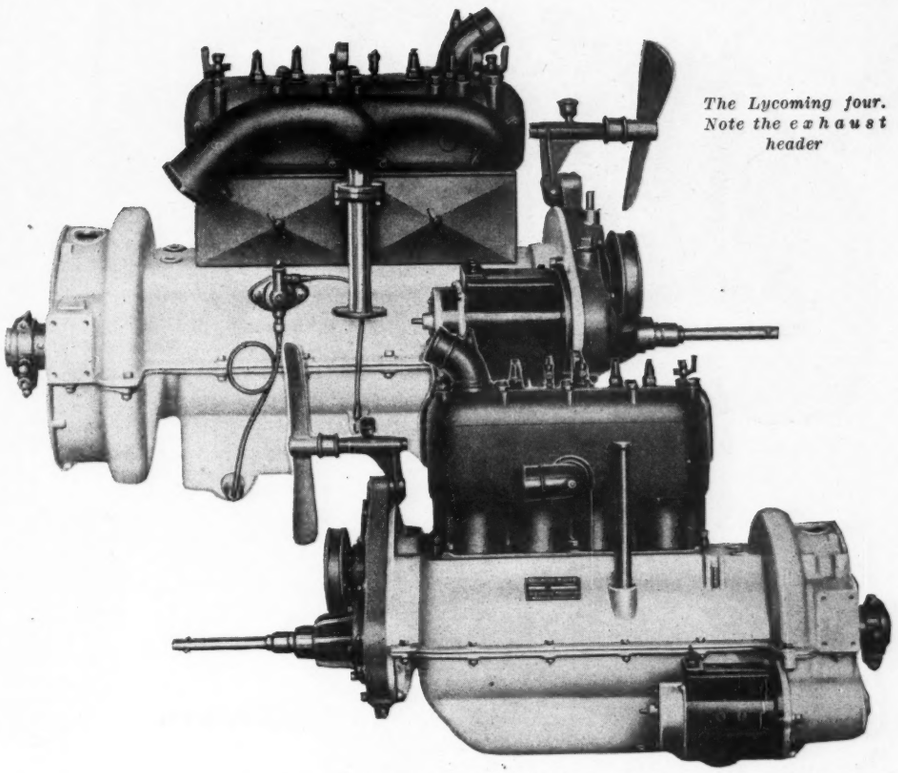
The Sterling four from all angles

naturally follow. The demand for higher speed engines naturally forces the trends along the lines of those things which make higher speeds possible and the first parts to be affected are the pistons and connecting rods. These must be made lighter if the higher speeds are to be attained, and for the past 3 years they have been growing lighter each season. This year has been no exception in spite of the fact that last year many thought the limits in light weight had been reached.

Aluminum Piston Not Progressing

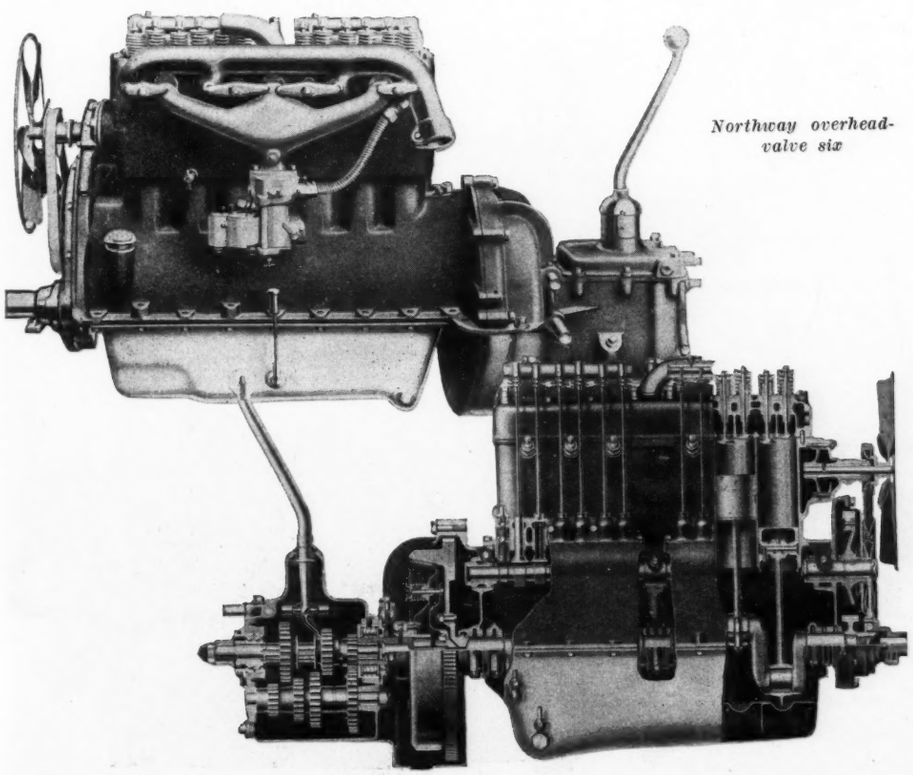
In spite of the predictions of a year ago, the aluminum piston has not been universally adopted. In fact, there has been a lull in its growth and although it is holding its own in many quarters, in other quarters it has not been satisfactory. The probabilities are that we have not yet learned how to make the aluminum alloy piston commercially. It has been criticized on the standpoint of life but, where it has not given service, it seems to be more a question of design and workmanship than from any real failure of the aluminum alloy itself. Experiments are actively under way all over the country on this material and it is very probable that with these and the ever-increasing demands for high speeds, they yet may become the standard for the light-duty passenger car work.

The iron piston is lighter than ever before because it is being better made and the finish is improving. There are no more lumps of useless metal on it. Where the lightness has been acquired is in the thining of the piston skirt and in at least one case of drilling the wall full of holes of about ¾-inch diameter. The connecting rods have not been altered very much as they have always been of the drop-forged I-beam variety for general use. The bearings also have remained about the same in the connecting rods, both as regards the upper and lower ends, except that everyone has come to high-grade steel for the bolts in the connecting rod bearing cap, as the higher speeds naturally have put quite a high stress on these parts.



The Lycoming four. Note the exhaust header

Aluminum cylinders have not become a sales factor. Last year there was considerable talk regarding the use of this material, but the cost having risen to more than 60 cents per pound, its use has not increased at the rate it probably would have done otherwise. The two car builders, who make their own motors with aluminum cylinders, Marmon and Premier, are exceptions.



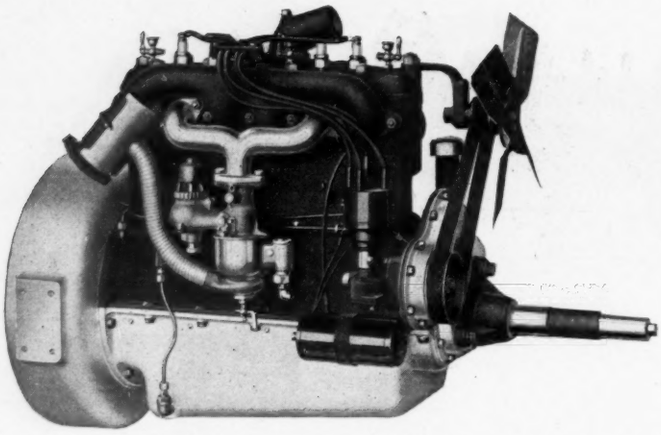
Northway overhead-valve six

Better water-jacket space has been given to cylinders, taking them as a whole. On the latest Falls motor, the water jackets have been extended clear down to the crankcase line. In detachable-head jobs, the water passages from the main cylinder casting to the head have to be watched with particular care and these passages have been enlarged. The Golden, Belknap & Schwarz engine has abandoned the use of the detachable head and has gone back to the solid casting. The tendency, however, is the other way.

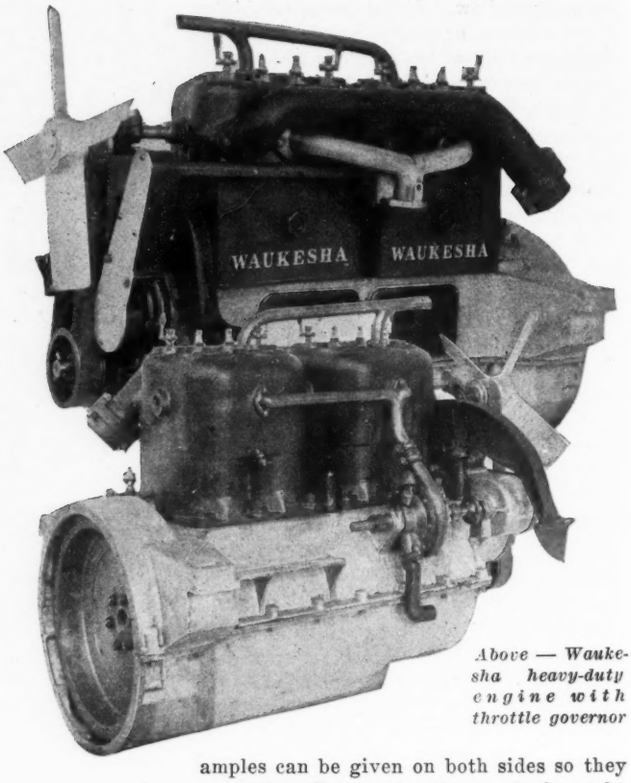
Value of Detachable Head

With the detachable head, the question of accessibility is answered immediately. The combustion chamber can be readily reached for cleaning out the carbon, the valves are accessible and if copper-asbestos gaskets are used, not paper, no trouble is had in fitting them.

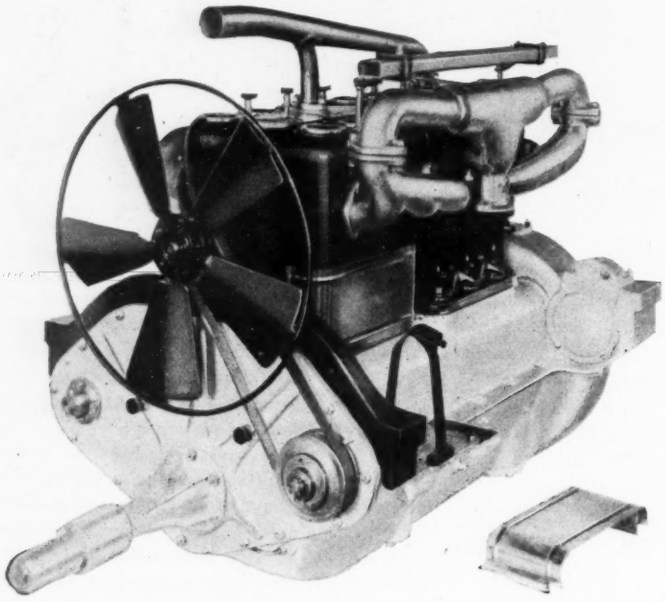
The V-engine cannot be overlooked in touching on the big points in engine practice. All doubt seems to have passed regarding its fitness. It is a question of cost versus performance. The question that each buyer must ask himself in deciding upon the purchase of a V-motor is whether he can get the same performance from an eight as he can from the six at the same price. The answer is both no and yes, for some have discarded the V, because they have felt that the six gives the better performance-price answer, while with others it has been the other way around. Ex-



Milwaukee Machine Tool Co. engine, showing arrangement of accessories

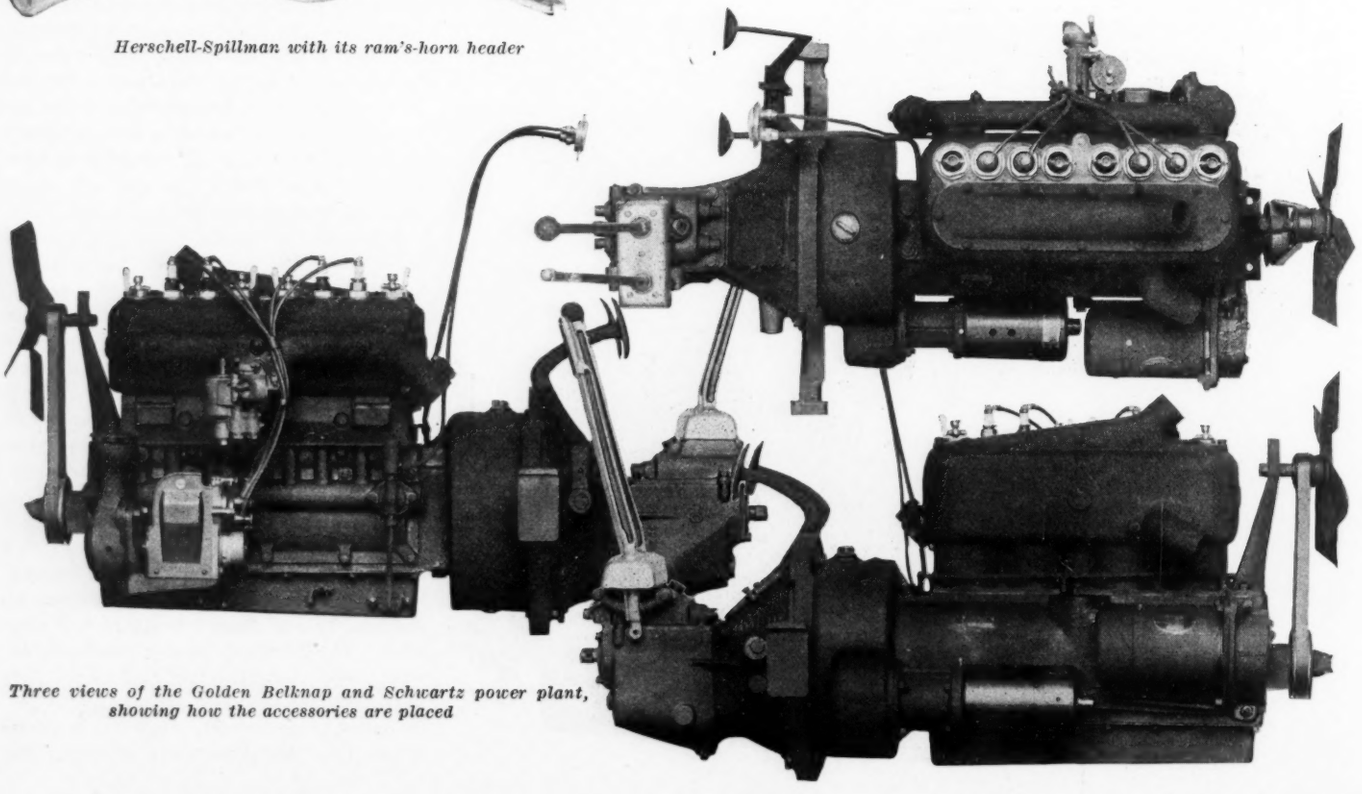


Above — Waukesha heavy-duty engine with throttle governor



Herschell-Spillman with its ram's-horn header

amples can be given on both sides so they mutually offset each other and show the point to be one that is open for debate, and since debate is stimulating and is really the key to progress. The V engine, besides having proved its fitness for the work, now stands as a champion of one type of design as opposed to the straight-line variety. The shorter, stiffer shafts in the V are offset with the maintenance questions and altogether the question has various ramifications which are carried



Three views of the Golden Belknap and Schwartz power plant, showing how the accessories are placed

down to the limits of personal choice. During the year we have had practical demonstrations which have shown both types to be satisfactory as far as performance is concerned.

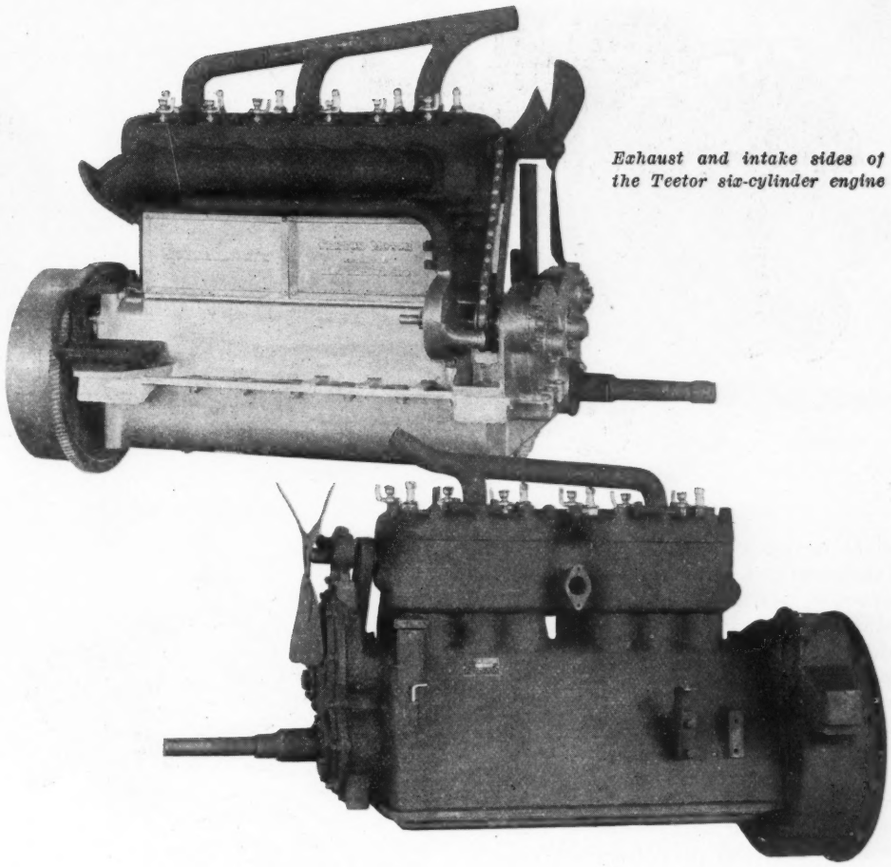
Oiling has not changed greatly except that there is a tendency to keep the valve drive submerged so that it cannot become noisy. The details of this will be considered separately but in taking up the main trends, it may be stated that oiling by circulating combination pressure and splash is typical. The oil pressure has gone up along with the speeds as would naturally be expected and now it is not uncommon to send the oil to the rubbing surface under a pressure of 40 pounds per square inch.

Pump Cooling

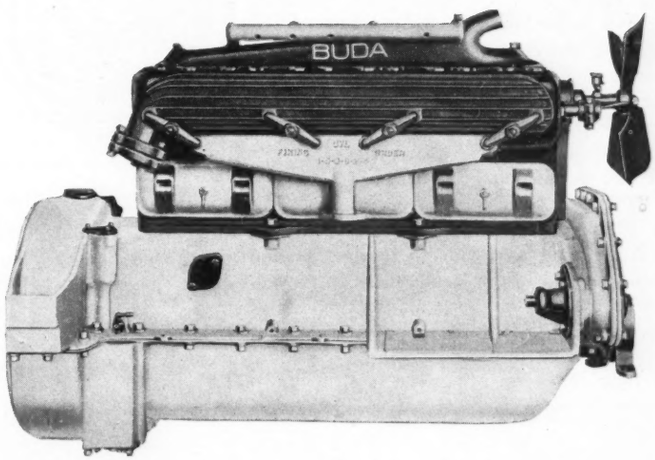
Cooling favors pump circulation among the motor builders. The proportion is about 66 per cent pump and 33 per cent by the thermo-syphon. The latter type of feed has been gaining for the last 3 years among the smaller engines although it has never worked out well for the V-engines. Control of the water temperature from the drivers' seat is coming and one prominent car manufacturer is shortly to announce as stock a dash-controlled radiator outlet shutter.

Crankshafts still are growing stiffer. They are larger in diameter and at the same time shorter. Rutenber has a 2-inch shaft in place of a 1¾ on its standard model 25, and this is typical. This is one of the points in which passenger car and tractor practice approach each other for entirely different reasons. In the passenger car, the stiffness is needed to take care of the higher speeds. In tractor work the stiffness is needed to take care of the constant racking of the engine on account of the rough work at constant maximum torque. Tractor engines must stand up. Two days may mean thousands of dollars in crop loss to a large farmer and he must have tractor engines that will work along indefinitely.

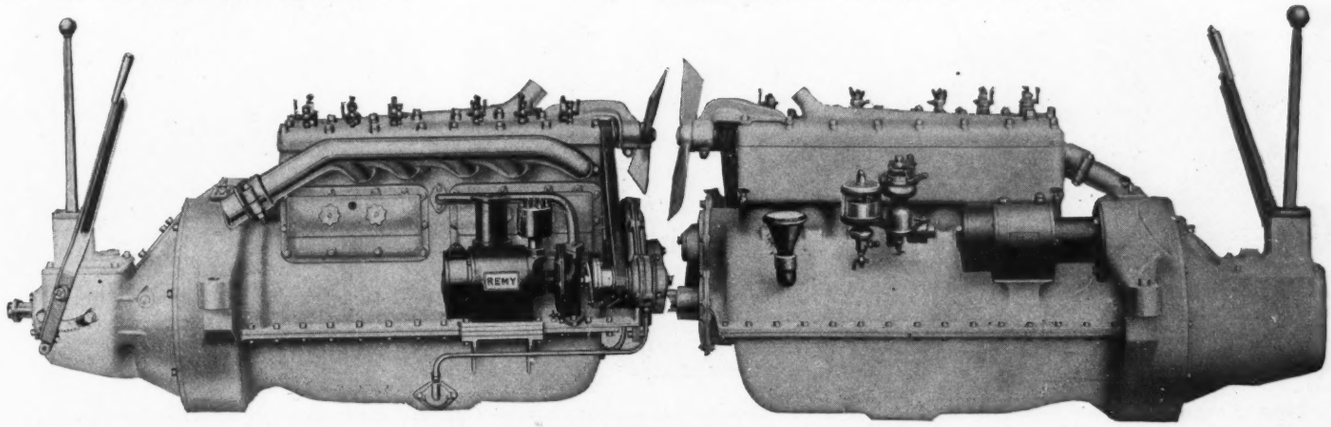
Furthermore on tractor work the ever-present grit and dust problem enters. It cannot be kept out in spite of washing apparatus on the carbureter and double filters in the breather pipe. It will get into the engine and the only thing to do is to



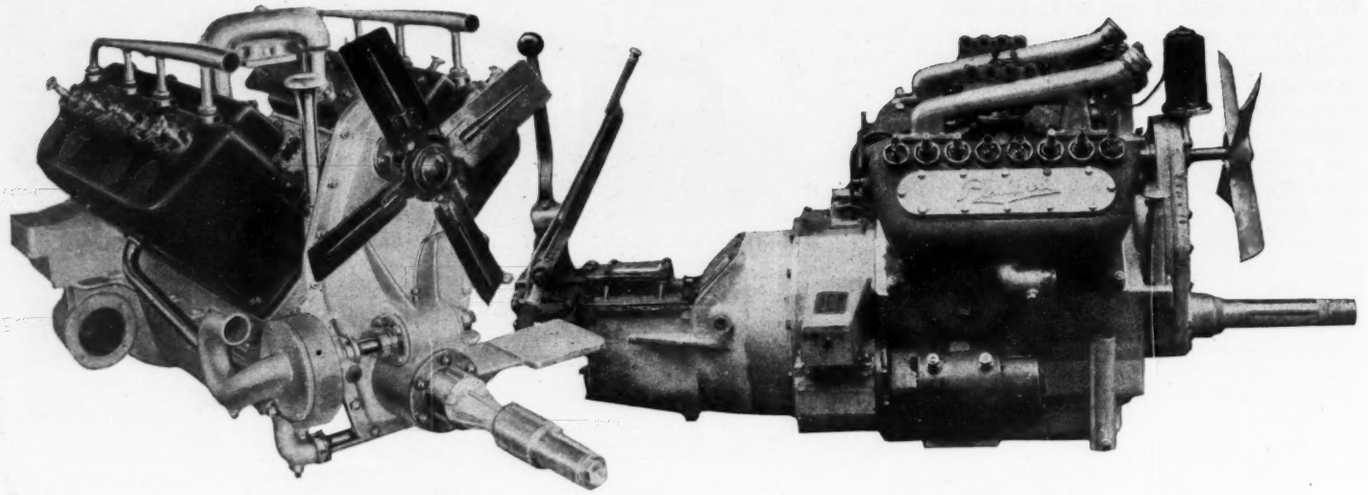
Exhaust and intake sides of the Teetor six-cylinder engine



Buda six, model SSU—Firing order cast on manifold



Two views of the six-cylinder Rutenber power plant



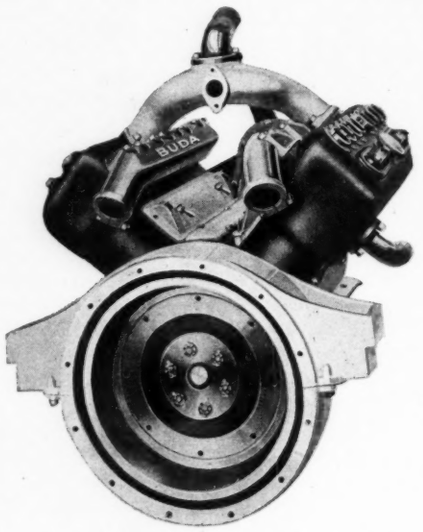
Two of the newer eights—at the right the Perkins and at the left the Herschell-Spillman

make the shaft so hard that it cannot be cut by the grit. The Waukesha motor for example uses a heavy chrome-nickel-steel shaft in which the tensile strength is carried up to 140,000 pounds per square inch and of a hardness test that almost equals tool steel.

No Silent Chain Progress

Silent-chain drive has not gone ahead in the last 2 years for camshaft drives. The wide-faced hellical gear seems to be about the most popular and the use of Fabroil, Micarta and other compressed materials is looked upon favorably by a great many. Waukesha is using a drop-forged gear, which it believes to be best for the rough work of tractors, especially in that nonresonance is not such a great necessity. In passenger-car practice, on the other hand, silence is greatly to be desired and hence wider faces, compressed fabric gears, the helical pitch and occasionally silent-chain drive.

Camshafts have not been altered materially. In fact, timing and cam contours have not changed much in the last 3 years. Where the offset rocker has been adopted it has necessitated a change in the cam, but the average timing will not be found to be much altered. There is a surprisingly small difference between commercial and passenger-car work, the latter being slightly more advanced for the higher speed. Exhaust valve opening at 45 degrees before lower center is about the average while for a few passenger cars, it will run nearer 55 degrees.



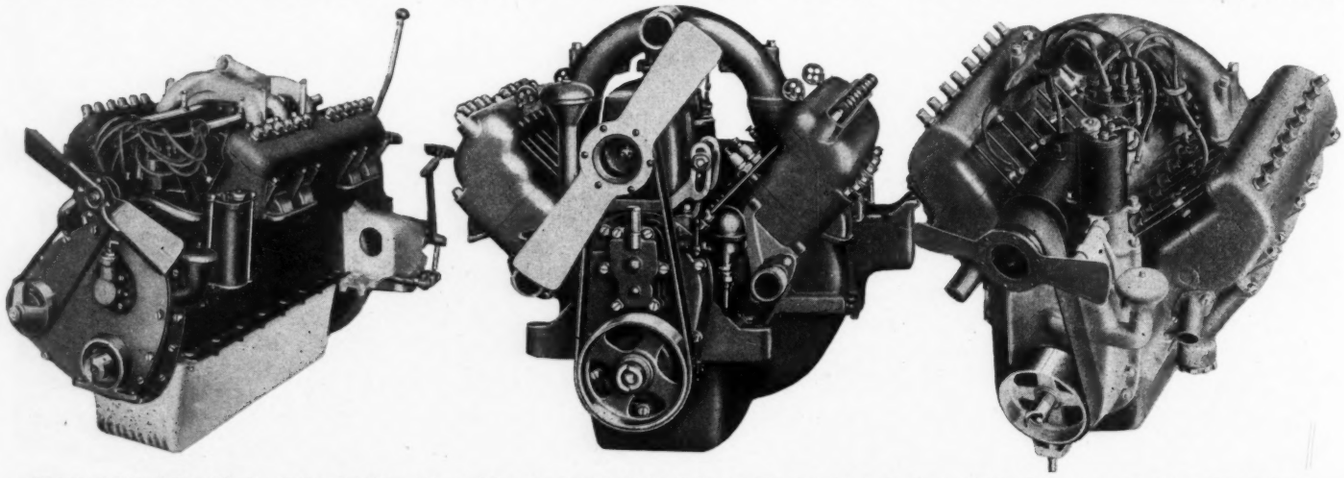
New Buda eight as seen from the flywheel end

In construction, the valve operating parts have been made lighter. There is quite a trend towards hollow push rods. Waukesha, Northway and Falls have all adopted them this year. The high speeds of the valves have called for a reduction in the inertia of the moving parts through decreased weight. If this inertia is not decreased, the followers will not cling to the cams. Steel tubing is used for the push rod and this is fastened by welding or expanding to the solid steel hardened follower.

Mushroom Lifters Popular

Followers of the mushroom type are growing rapidly and the roller design seems to be falling off among the motor specialists. There is generally an offset on the follower to distribute cam wear. This is secured through the simple means of making no accurate determination of the push-rod center, so the variations in the casting will give the offset.

Valve sizes, as stated before, have not changed much. There are quite a number of theories on the subject. For instance, one engineer will say that in truck motors the gas velocities have to be higher in order to take care of the lower-grade fuel now on the market. Another truck motor engineer will state that the truck engine valves have to be larger in order to secure the higher volumetric efficiencies at lower



Three of the eight-cylinder Ferro family. They differ in detail, but all have the overhead feature which allows for adjusting the pushrods and oiling the rocker arms from the outside

speeds. As a matter of fact, practically everyone is going just as large as he believes safe in valve sizes.

Tungsten for valves is rather high in price. The natural result is experiments with other alloys. Wisconsin is using tungsten, so is Northway, while Waukesha has found 3½ per cent nickel-steel very satisfactory. Another concern is experimenting with chrome-nickel while a few who cannot secure the material at commercial prices are trying other alloys. There is a very strong contingent in favor of the cast-iron valve also.

Higher pressures are used in oiling to compensate for the higher speeds. In the engines made by passenger-car manufacturers there has been a tendency towards full pressure feed. This has been followed to some extent by the motor manufacturers. The Buda oil pump delivers a pressure of 40 pounds at 1,000 r. p. m. of the crankshaft and this is typical of other practice.

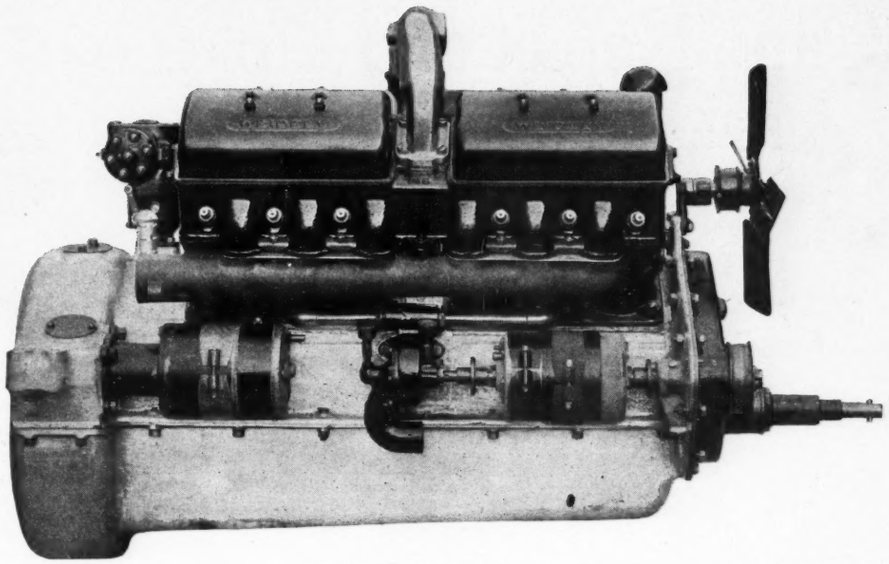
Gear Oil Pump in Majority

In oil-pump practice there has been a little uneasy shifting around, both in the pump and in the drive. The Waukesha changed to a plunger pump a year ago, but came back to the gear device. Rutenber on the other hand has changed over from a vane pump to a plunger. The gear pump is in the majority, with the drive taken off the end of the camshaft. Oil leads are larger and, as a rule, are confined within the limits of the motor.

Some of the companies have simplified the oiling system to the extent of making it entirely self-contained. This has been a tendency for 3 years or more. The Wisconsin pump can be removed by taking four studs out of the bottom of the case. The Falls company has removed the external pipes this year and made the system self-contained. In the Le Roi engine, there is a compartment surrounding the camshaft which acts as a secondary oil chamber. It is 8 inches above the crankshaft and consequently gives that much hydraulic head for continually maintaining a supply in the splash troughs.

The matter of maintaining the oil in the splash troughs becomes very important in tractor work where a machine may be forced to operate on the side of a hill or constantly up-grade or down hill, while it is running some stationary installation. Waukesha has solved the problem by rectangular troughs in which the scoop dips at the center or diagonal intersection of the rectangle. The scoop has been designed to give sufficient dip at any possible inclination.

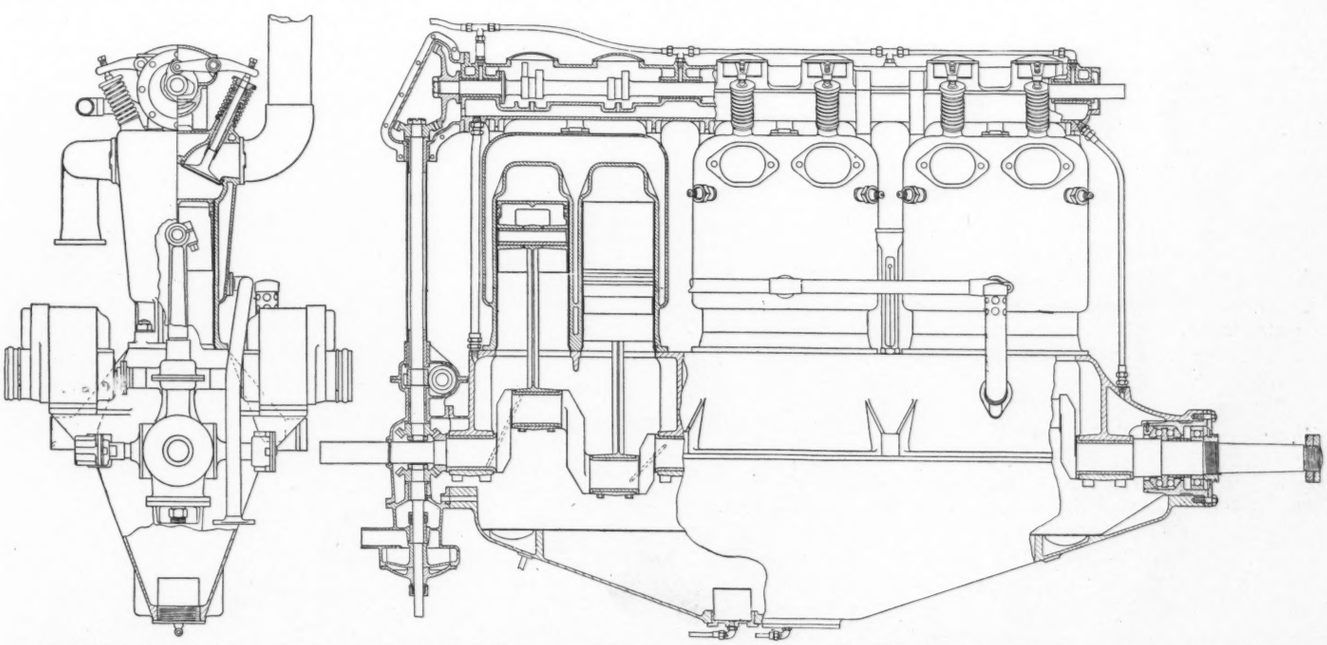
Dust filters must be used in the oiling system of the tractor engine. Particularly, is this true in the breather. One engine uses two screens in the breather pipe, the top removable and the other stationary. The continual cloud of gritty dust that surrounds the tractor is its worst enemy and although the grit cannot be altogether kept out, every precaution must be taken. Tractor motors must be entirely inclosed.



Weidley twelve-cylinder engine

CALUMET OUT MARCH 1

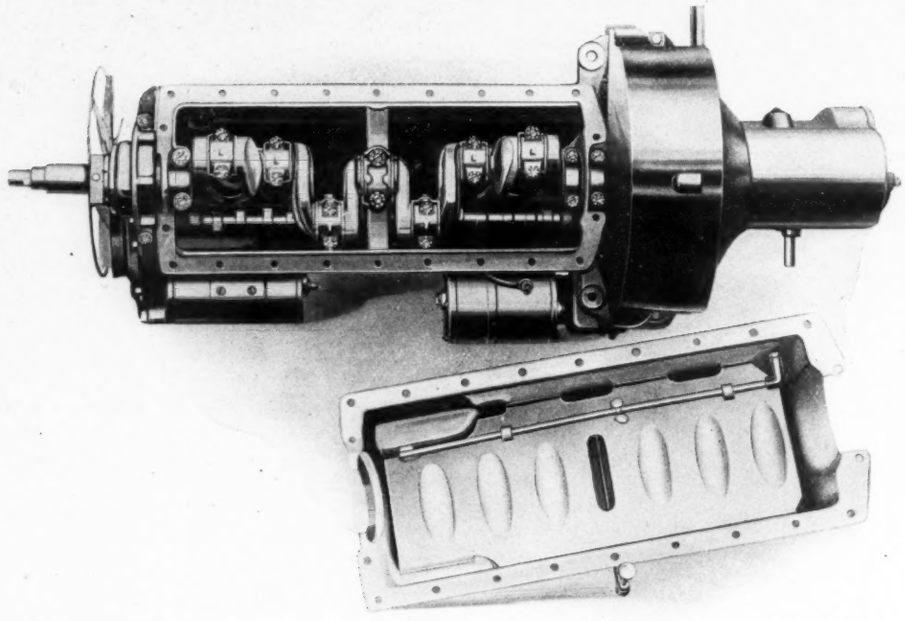
Chicago, Nov. 6—The Calumet Motors Corp. will manufacture a six-cylinder, four-passenger clubster and a five- and seven-passenger touring car, production to start March 1, 1917, in its new factory now in construction at Lamont, Ill. The company which has its headquarters at present at 9154 Commercial avenue, this city, has as its official personnel, G. A. Holcombe, president; Albert R. Hulbert, secretary; H. A. Zimmerman, treasurer.



New Wisconsin aviation motor, with overhead camshaft and valves set at an angle in the cylinder heads. This is an example of the latest development in motors

Care, Repair and Upkeep of 1917 Engines

Hints on Grinding and Adjusting Valves, Bearings, Piston Rings, Etc., in the New Stock Motors



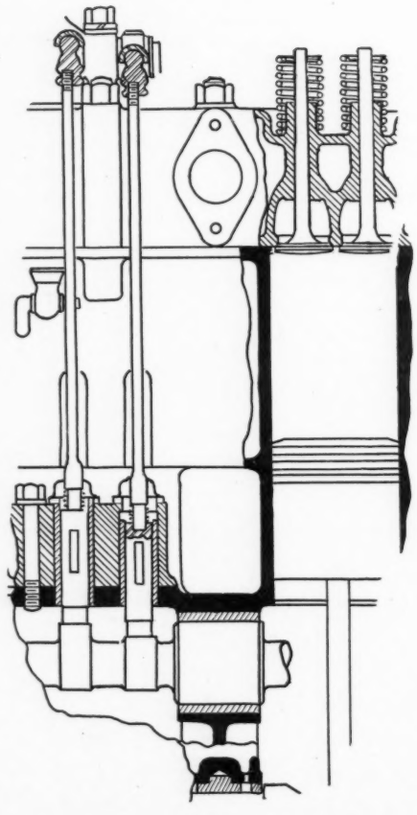
Northway six crankcase with oil pan removed to show how connecting rod and crankshaft bearings may be adjusted

YEAR by year the annual engine repair bill has been growing less. Two reasons for this are apparent after a study of the improvements made during the past few years. The first is that parts are better and stronger owing to superior design and material and second because the time that has to be consumed in doing the work is less.

It has been very unfortunate that in a great many designs the time taken to reach a certain part of the engine will be as much as ten times that required to make the repair. With labor charges running at 85 cents an hour, it seems unreasonable to have to pay $7.50 for the time necessary to make a 15-cent replacement. One of the reasons for this is that the best manufacturing jobs are often the poorest from an upkeep standpoint and it is with a feeling of thankfulness that motor car owners note any trend which tends to bring good manufacturing and repair practice together.

Cylinder Accessability

The detachable cylinder head is a case in point. With this arrangement it is very easy to reach the valves and also to work upon the combustion chamber, thus cutting down the time ordinarily required for such work with a solid-head engine. It is good manufacturing practice because it makes the grinding or reaming of the cylinder easier and less expensive. Furthermore, it helps in getting the combustion chambers to be equal in size and this in turn produces a smoother running engine.



Valve operation of the Falls motor

Another case where a little difference in design means a great saving in time of making repairs is in the ability to pull the pistons out past the crankshaft. If the shaft has to be taken off to pull the rods and pistons out, it generally means not only the time taken for the removal of the shaft but also for the adjustment of the main bearings, which are generally thrown out of adjustment by taking down the bearing caps.

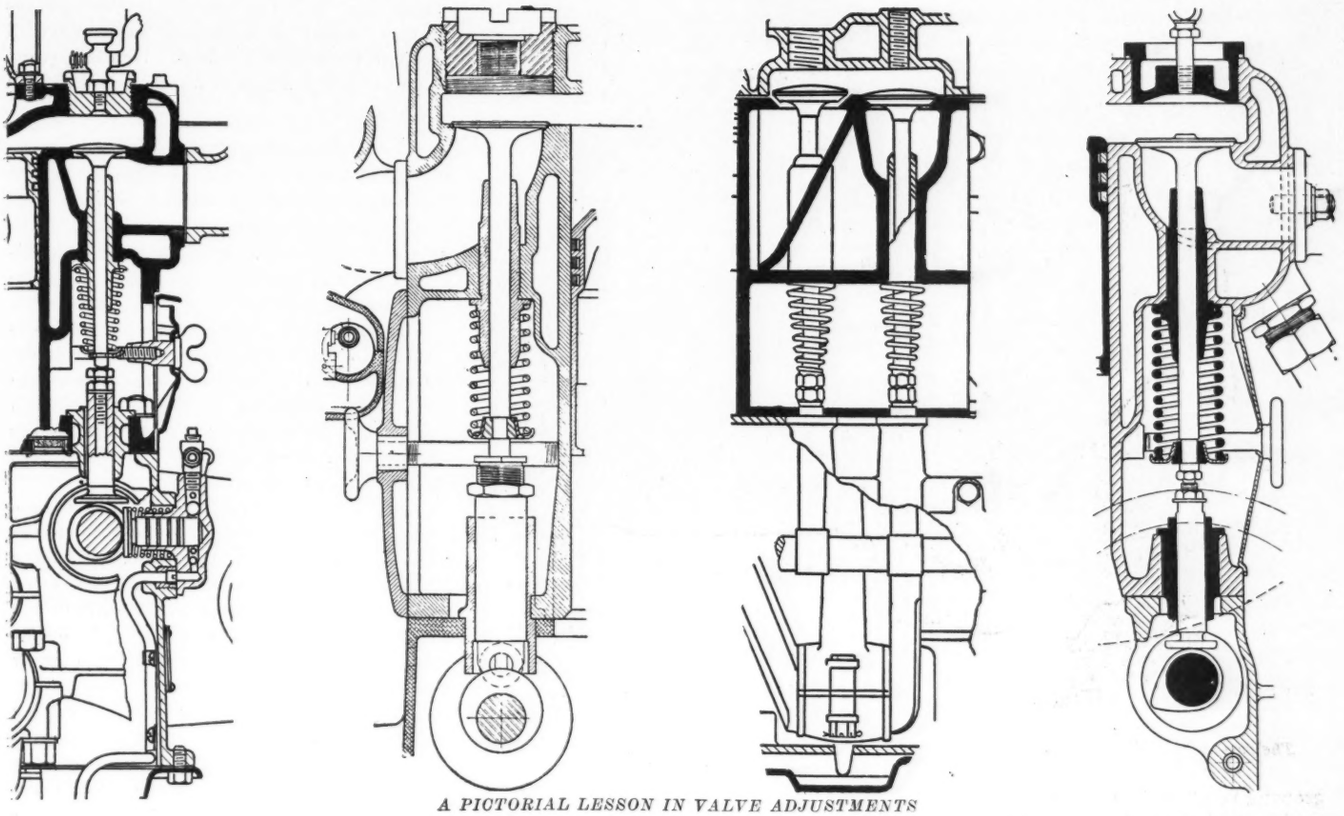
The jobs that are most commonly met by car owners who do their own work are:

Grinding valves,	Tightening joints,
Removing carbon,	Refitting gaskets,
Adjusting valves,	Repacking pumps,
Refitting bearings,	Replacing bushings,
Replacing piston rings,	Adjusting chains,
Cleaning crankcase,	Retiming motor,
Adjusting oil flow,	Replacing valves.

All of these are familiar and the steps taken to do the work are not different in the 1917 engines from what they were a year ago. It will be of interest to note, however, how the work is being simplified.

Continental Engines

Probably the clearest way of showing definitely how the problems in connection with upkeep would be to take typical engines of each class and show how it is handled on these and then to note the differences on engines of other makes. Probably as good an example as can be found will be the Continental 6-P. This



A PICTORIAL LESSON IN VALVE ADJUSTMENTS

Waukesha *Continental* *G. B. & S.* *Wisconsin*

is the larger of the aluminum crankcase Continentals. There are three sixes in all, the small 7-W, which is a unit cylinder and crankcase job, and the 7-N and 6-P with aluminum crankcases.

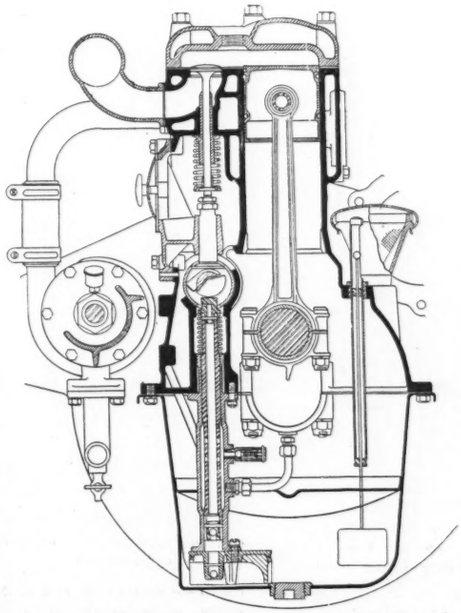
The operation of grinding the valves and adjusting them is typical of the modern up-to-date L-head engine. The operating mechanism is covered by side plates, which must be removed before any work can be done. For simply adjusting the valves, there are screws and lock nuts on the push rods. The lock nuts are, of course, loosened, the adjustment brought to about .004 of an inch or about the thickness of a calling card, and the locknuts again tightened.

Grinding of Valves

To grind the valves, the steps are the same as has been common practice for a number of years. The caps are removed at the top of the cylinder, after having taken out the priming cocks and spark plugs so as not to damage them. Any of the approved valve lifting tools can be used to raise the valve against the spring pressure while the spring retainer is taken off. The valve can then be let down, the spring taken off and it is ready for grinding in the usual way.

If bearing work has to be done such as for instance in the connecting rods, the lower half of the crankcase is dropped down by removing the bolts around the crankcase flange. Shims are used on all the bearings and it is only necessary to remove one or two of these thin liners, being careful to remove the same number from each side and not to have the bearing too tight. If the bearings are too far gone to be taken up by simply removing shims, it becomes a matter of hand scraping. The bearings are bronze-backed babbitt and the latter material must be brought to a hand-finished fit.

The pistons on this motor can be drawn past the crankshaft. The lower rod bearings are disconnected, the caps being removed and the rods swung out past the crankshaft. The entire rod and piston assembly is then drawn out. It may be set down as a general rule for repairmen in motors not to take for granted that the crankshaft has to be removed in every instance. The above should be tried first and in many installations a great amount of time will be saved.



Valve, connecting rod and oiling adjustments of the Rutenber

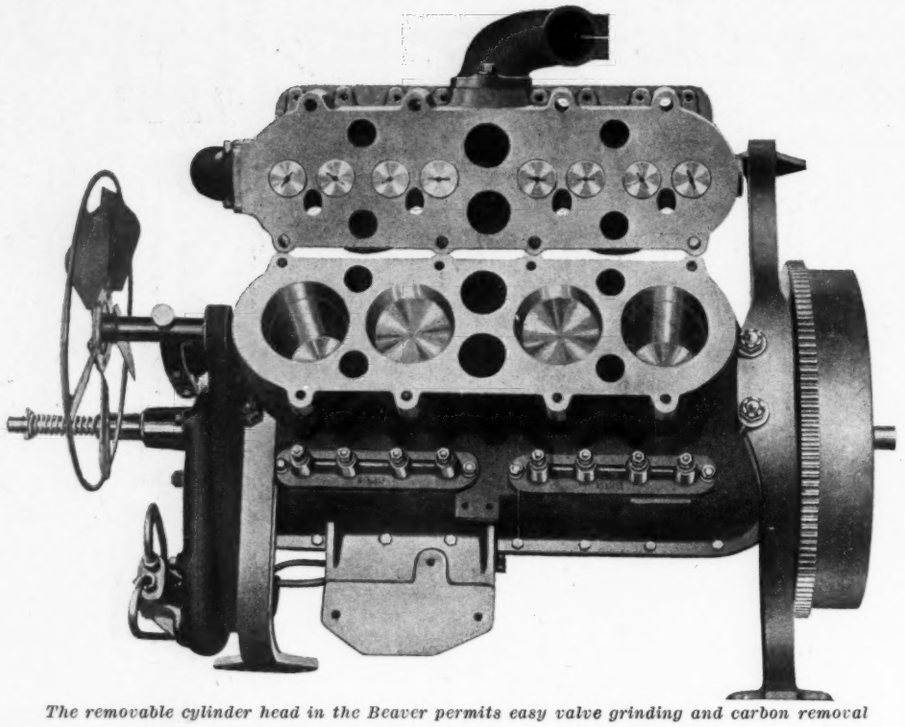
To renew the piston rings requires no particular grade of skill or instructions, if they are to be allowed to run themselves in. It is a better job if time permits and the owner is ready to go to the expense, to lap them in. A dummy piston must be used for this work and by no means should the regular piston ever be used.

No Lubrication Adjustment

No adjustments for lubrication can be made as the system is automatic. The oil level gauge is set so that 7 quarts of oil register at the word HIGH and all that is necessary to do is to clean out the system once in a while by kerosene flushing.

In retiming the motor, all that is necessary to do is to be guided by the marks on the flywheel. It is common practice among those who build motors for the trade to mark the flywheel so that when the mark registers with the indicator mark, certain conditions should hold true. The No. 1 cylinder is timed according to the marks, and, as a rule, when this is correct the others naturally fall as they should. It is not necessary to take down the motor to remove the camshaft as this can be withdrawn by removing the gearcase cover.

The 7-W Continental motor represents another class of engine, and one that is



The removable cylinder head in the Beaver permits easy valve grinding and carbon removal

growing in popularity for medium-powered work. In this, the cylinders and crankcase are cast together from gray iron. The crankcase and oil pan is made of pressed steel and the cylinder head is a separate casting.

With the separate cylinder head it will be seen at once that all the work around the combustion chamber is very much simplified. The valves can be reground without having to have the complete engine at hand. The head can be taken to a convenient place and worked on separately. It is an easy matter to grind valves with the head thus removed.

All the bearings are carried in the crankcase and can readily be reached by dropping the oil pan. There is a patent locking device on the valve stems which is quite simple and readily removed and the valves are covered as usual with the removable metal plates. The bronze bushing at the top of the connecting rod is pressed into place and in case of renewal will have to be driven out by means of a punch and leaden mallet. On this motor the exhaust manifold and the other exterior fittings are arranged so as not to interfere with repair work on the valves. This is a growing tendency and one which will probably continue.

Sterling and Falls

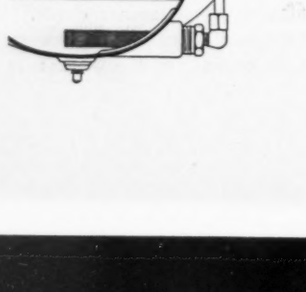
In the two classes of Continentals just given, the maintenance problems as they are expressed in engines of this type have been brought out. Another type which is popular and which is treated in a different way in some of its details is the valve-in head design. A good example of this is given in three very typical overhead, detachable top jobs, the Sterling, such as used, for example, in the Scripps-Booth cars; the Falls, used in such cars as the Grant Six, Elgin and Hollier sixes; and the Beaver, used in the Interstate.

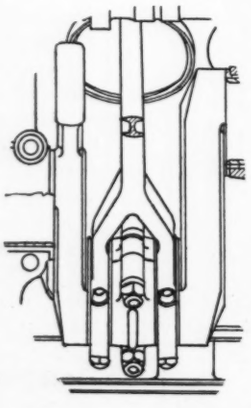
As far as all the crankcase work on these engines is concerned, it is the same as on the others. When the pan is dropped the bearings are exposed. A kink to know on the Sterling engine which has aluminum alloy pistons is that a strip of piano felt should always be placed under the lower piston ring.

Another feature of the Sterling engine is the fact that the valves can be adjusted by means of a screwdriver without removing the head cover. This is the Brush overhead valve gear and the adjustment is made directly on the screw which protrudes at the top of the motor governing the position of the fulcrum. For valve grinding, cylinder cleaning, etc., the head is removed by taking out the studs.

Beaver

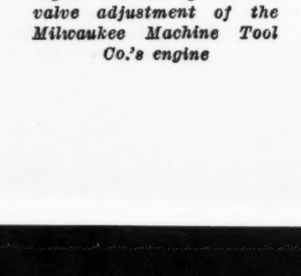
On the Beaver motor, also, the entire top is removable by taking out nine studs.





Above, how the connecting rod bearings are set up on the Northway eight

At left, valve adjustment and oiling on Sterling



Above—Valve operation of Lycoming, showing tappet adjustment

Right—Connecting rod and valve adjustment of the Milwaukee Machine Tool Co.'s engine

The spark plugs on this motor are mounted at an angle of 45 degrees in the cylinder head, while on the Sterling they are set horizontally in the side. The valves are adjusted on the Beaver motor by nuts at the bottoms of the push rods. As these are external they are very accessible, and will be found just above the tappet guides on the left side.

A little difference exists in this year's Falls motor and last in that the valve action cover has been removed and the top made solid instead. It was found that with the cover there was a tendency for the owner to neglect the lubrication of the overhead valve mechanism, while with it exposed, it is constantly in sight and will be attended to. If the repairman finds difficulty in grinding some of the valves, owing to the fact that the abrasive will cut the surface very slowly, it is because many of these motors have been sent out with a very hard alloy steel valve. Another point on the valve system of this motor which must be remembered in overhauling is that the oil is pumped to the top of the pushrod guide.

No valve cages are used in any of these motors, the valves operating directly within the water-cooled heads.

Wisconsin, Waukesha and Buda

On the four-cylinder L and T-head engines, whether they are intended for passenger car work or for trucks and tractors, the work has been quite well standardized. Among this class of motors may be mentioned the Continental truck engines, such as the models C, E and N, all L-head fours, the Buda RU, QU, TM, and YU, all the Waukesha types, and the Wisconsin UU, and TU block types. The T-heads, such as the Wisconsin AU, and JH, with the cylinders also follow conservative design.

The problems of upkeep in all these engines are very similar. They vary considerably in dimensions and materials, in certain parts, but to do any of the repair work that has been mentioned, the same procedure would have to be followed as for any of the standard solid-head engines. On all these the heavy crankshafts have required bearing sizes of liberal dimensions and consequently there is a larger bearing surface to be accurately fitted and expert workmanship is required to get the accurate fit desired. All these bearings are supported directly in the crankcase and to reach them it is only necessary to drop the pans which act in the dual capacity as an oil reservoir and seal.

V-Engine Repairs

Repairs on V-engines, eights and twelves, are really not more difficult than they are upon the single-line engines. There are, however, more parts to consider, inasmuch as there are more cylinders. They are all arranged differently, too, and divided into the same classes as other motors. The Weidely twelve-cylinder motor used on the H. A. L. and Pathfinder cars, for instance, is an overhead valve job, whereas the Herschell-Spillman eight has the valves on the sides inside the V.

The valve-grinding jobs and all the other work in connection with the valves is taken care of in exactly the same way as for the ordinary type of motor. Some of these V-engines have two camshafts and others one, but as far as the owner who wishes to make his own repairs is concerned, the results are the same.

In working on the lower end of the connecting rod, the biggest difference is to be noted. If the rods are of the side-by-side variety, there is not a great difference between those and the rods of the ordinary vertical engine. On the other hand, if the forked rod is used with the rods from one block around the rods of the other block, the matter of adjusting the bearings is a little more complicated and calls for skilful bearing work. Here, the alignment must be particularly noted or the rods will tend to bind together at one part of the revolution and separate at another. In other words, there will not be a true bearing surface and the job will not stand up.

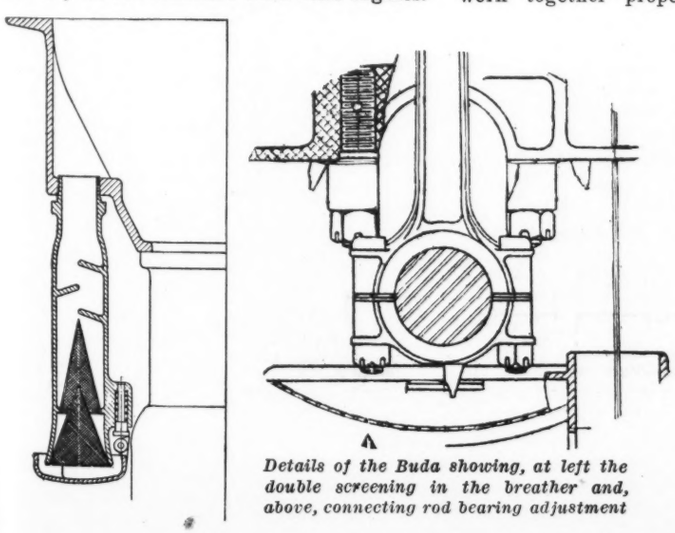
The two bearings should be lined up together so that when the assembly is finished the entire connecting rod set will work together properly. The outer or forked rod has to be watched, particularly as there are two bearing surfaces, one on each side of the fork, which must be correctly lined up.

The main bearings of the crankshaft are the same on the V as on the vertical engine, and it is general practice to simply drop the lower pan, which acts as a lower cover and oil pan, to get at the bearings. A point that all owners must remember in taking up bearings, both as regards the connecting rods and main bearings, is that the nuts must be absolutely tight after the adjustment is made. Generally the nuts are castellated and the cotter pin should always be slipped through and hammered over. This is very important, as the nuts are sure to back off unless they are locked in this way.

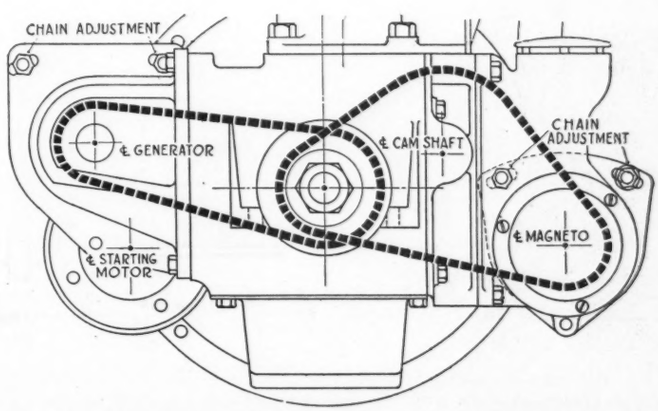
On all the engines, the oil level is set at the factory and need never be touched. The grade of oil to be used also will depend on the service to which the car is to be put and the climate in which it is used. Medium oil should be used under all average conditions, but generally speaking, heavy oil should always be employed after an engine has run 5,000 miles, particularly in warm weather. In very cold weather, the medium oil can be used at all times. It is rarely wise to use the lighter oils, as they will work past the pistons and

N. Y. SHOW SPACE AT PREMIUM

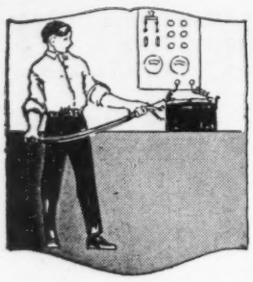
New York, Nov. 6 — Seventeen new makes of cars will make their maiden bow at the New York show in January, which promises to be the largest exposition of cars yet brought together. There will be a greater number of exhibitors than ever before and every inch of available space on four floors of the Grand Central Palace has been allotted and there is a large waiting list of concerns who would like to show their products. An effort is being made to provide space for late applicants. For the first time in the history of national shows, all the space allotted to car exhibitors was filled at the first drawing. Besides it was found necessary to take space for motor cars on the fourth floor that was usually given over to accessory displays.



Details of the Buda showing, at left the double screening in the breather and, above, connecting rod bearing adjustment



Chain timing drive of the G. B. & S. engine and the points of adjustment for taking up slack in it



Electrical Equipment of the Motor Car

By David Penn Moreton & Darwin S. Hatch.

Editor's Note—Herewith is presented the twentieth installment of a weekly series of articles which began in Motor Age issue of June 29, designed to give the motorist the knowledge necessary to enable him to care for and repair any and all of the electrical features of his car, no matter what make or model it may be. At the conclusion of this series, "Electrical Equipment of the Motor Car," with additions, will be published in book form by the Class Journal Co., Chicago, in a size to fit the pocket conveniently. It is expected that the book will be published about May 1.

Part XX—Third-Brush Regulation

IN ORDER to understand the operation of the third-brush machine it will be necessary to make a brief study of the magnetizing action of the current in the armature winding of a generator in combination with the magnetizing action of the current in the field windings.

A cross-section through the armature and poles of a two-pole generator is shown in Fig. 138. The wires on the surface of the armature are represented by twenty small circles spaced equal distances apart around the outside of the large circle which is supposed to represent the armature core. As a matter of fact, there are more than twenty wires on the surface of the armature, but this number has been used to simplify the diagram, the results being exactly the same. The polarity of the poles is indicated by N and S; the polarity of the armature core by N and S; and the direction of the magnetic field by the small arrows.

If the armature be revolved in the clock-wise direction, as indicated by the large curved arrow at the top of the figure, an electrical pressure whose direction is away from the observer will be induced in the wires on the left-hand side of a vertical line through the armature, and an electrical pressure whose direction is toward the observer will be induced in the wires on the right-hand side of the armature. An electrical pressure, or current, toward the surface of the paper is represented by a plus (+) sign and one away from the observer by a minus (—) sign. If you will think of the + and — signs as being respectively the feathered end and flattened point of an arrow pointing along the wire, the diagram becomes plain. The direction of the current always can be found by the Right-Hand Rule mentioned previously.

The wires on the surface of the armature are all interconnected by the commutator segments, and a current will be produced in them when the brushes resting on the commutator are connected to a closed electrical circuit. This current in the armature will produce a magnetizing action just the same as the current in the field windings. The magnetic effect of the current in the armature winding of the generator may be investigated by sending a current through the armature from an outside source, such as a battery, in the same direction as the current the generator itself would produce, with the armature standing still and no current in the field windings. The general form of the magnetic field produced by the armature current would correspond to the dotted lines shown in Fig. 139, and its direction through the armature would be from the lower toward the upper side. The polarity of the armature is indicated by N and S in the figure. As a matter of fact, this magnetic field can never exist alone, but the magnetizing effect of the armature current combines with the magnetizing effect of the field current to form a resultant field whose general form will correspond to the one shown in Fig. 140.

The magnetizing effects of the armature and field currents may be considered just the same as two mechanical forces which are acting on an object at right angles to each other. Thus the direction of the magnetizing force of the field current may be represented by the line marked F in Fig. 141, and its direction corresponds to the direction in which the arrow head points. Likewise, the magnetizing effect of the armature current may be represented by the line A, and its direction corresponds to the direction in which the arrow head points. The two forces combine to form the resultant force R, which produces the magnetic field whose direction cor-

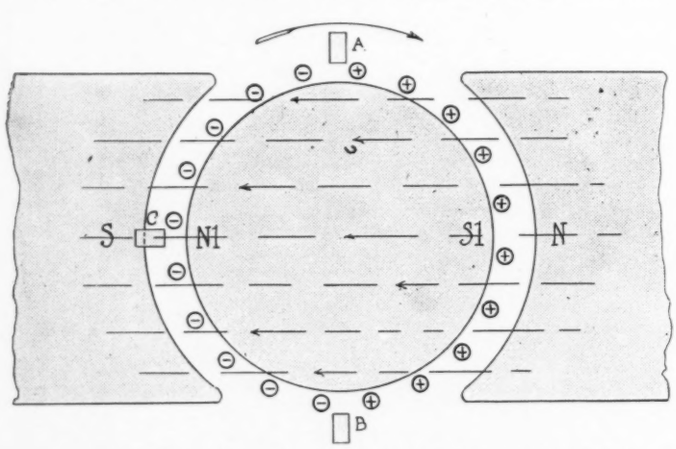


Fig. 138—Cross-section through fields and armature of a two-pole generator, showing magnetic field produced by the field current alone. If you will think of the + and — signs as being respectively the feathered end and flattened point of an arrow, the diagram becomes plainer

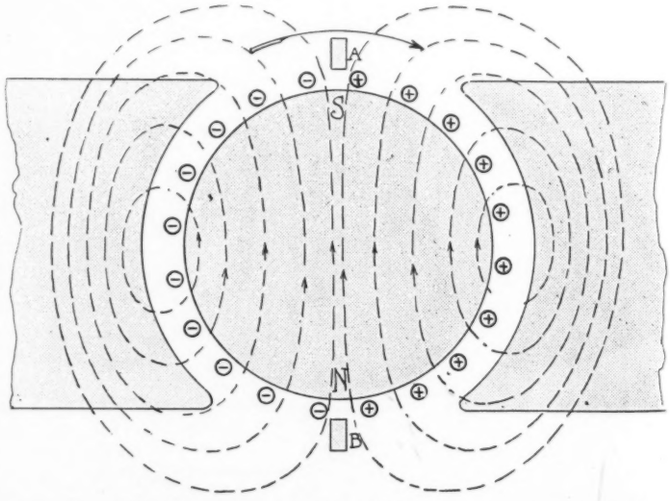


Fig. 139—Cross-section through fields and armature of a two-pole generator, showing magnetic field produced by armature current alone

responds to the arrow head. The angle the resultant R makes with the horizontal will depend upon the relation between the two forces, A and F, the larger the value of A the greater the angle. This magnetizing action of the armature current is called armature reaction.

If the brushes be placed on the commutator in such a position that they rest on segments that are connected to conductors on the surface of the armature in which there is no induced electrical pressure, a maximum voltage for a given field strength and speed will exist between them. The brushes A and B in Fig. 138 are shown in a position for maximum voltage. If a third brush C be placed on the commutator midway between the brushes A and B, the voltage between A and C will be exactly the same as the voltage between C and B, because the same amount of magnetic flux is cut by the conductors in moving from C to A as is cut in moving from B to C. When the magnetic field is distorted, due to armature reaction, as shown in Fig. 140, the voltage between B and C will be less than the voltage between C and A, since there is a greater amount of magnetic flux cut by the conductors in moving from C to A than is cut by them in moving from B to C.

The position of the brushes shown in Fig. 138, 139 and 140 does not correspond to their actual position in practice, on account of having the end connections of the armature winding all of practically the same length. The armature winding of a Delco generator is shown diagrammatically in Fig. 142. The winding can be imagined as being removed from the surface of the armature and laid out flat with the pole pieces shown shaded. The commutator segments are spread out and shown in their proper relation to the armature conductors. The various coils composing the armature windings are connected together at the commutator segments, and in order that the ends of these coils leading out to the commutator segments be of the same length and form, it is necessary that the segments to which the terminals of a coil are connected be as near the center of the coil as possible. For example, starting with segment number two and tracing through a coil, you end up at segment number three, etc., and segments two and three are placed opposite the centers of the coils which are shown connected to them in the diagram.

In order to simplify the diagram each coil is represented as being composed of a single turn. With this type of connection the main brushes will be in positions opposite the centers of the poles, as shown in Fig. 142 and 143. The voltage between the brushes B and C will become a smaller and smaller part of the total voltage between the brushes A and B as the magnetic field of the generator is distorted, due to the magnetizing action of the armature current. The shunt field winding is connected to the brushes B and C, and the current in this winding decreases with an increase in speed of the generator, as shown by the curve marked shunt field current in Fig. 144. The current delivered by the generator increases in value with an increase in speed up to a certain maximum value and then starts to decrease with further increase in speed, due to the weakening of the magnetic field, as shown by the curve in Fig. 144.

NEXT WEEK

The next installment of the series on the Electrical Equipment of the Motor Car will consider electromagnetic regulation

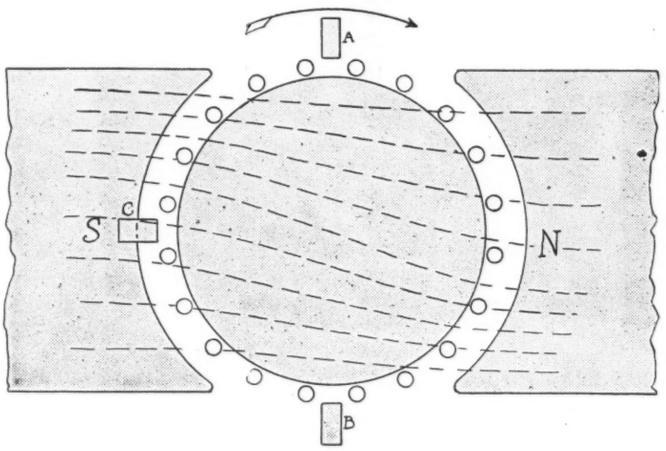


Fig. 140—Cross-section through fields and armature of a two-pole generator, showing resultant magnetic field produced by armature and field currents acting at the same time

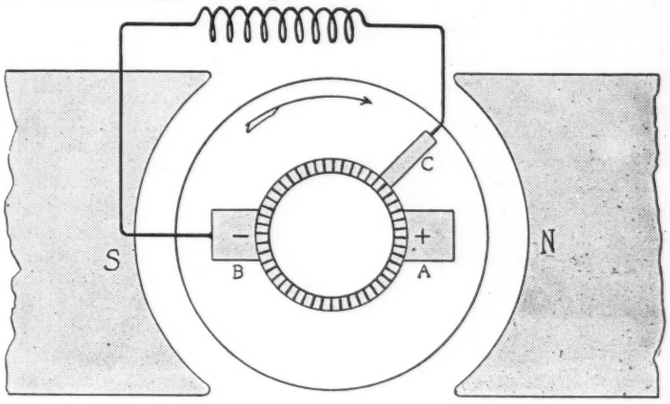


Fig. 143—Connection of shunt field on third—brush machine. The main brushes are in positions opposite the centers of a poles in this type of connection

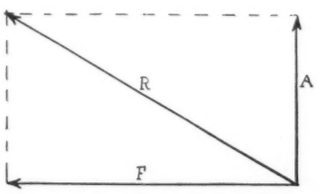


Fig. 141—The combined magnetizing activities of armature and field currents A and F form the resultant magnetic activity R

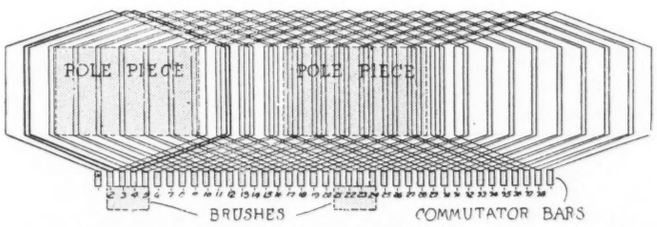


Fig. 142—Diagram of armature winding on a Delco generator. Each coil is represented by a single turn in order to simplify the diagram. The pole pieces are shown shaded

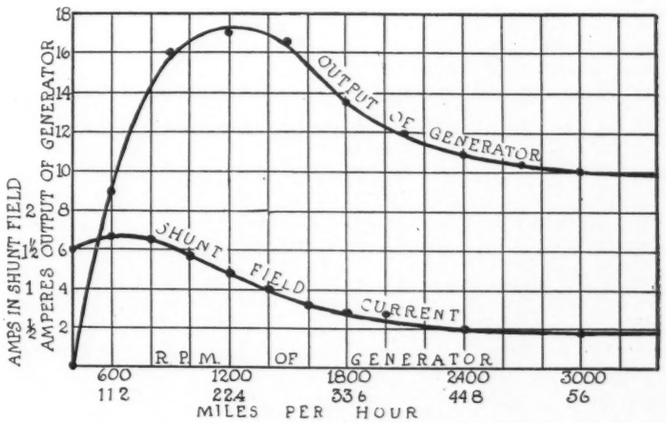

AMPS IN SHUNT FIELD
AMPERES OUTPUT OF GENERATOR
OUTPUT OF GENERATOR
SHUNT FIELD CURRENT
R P M OF GENERATOR
600 1200 1800 2400 3000
11 2 22 4 33 6 44 8 56
MILES PER HOUR

Fig. 144—Curves showing relation of shunt current and delivered current to the speed of car in miles per hour and speed of generator in revolutions per minute for a Delco third-brush generator

From the Woman's Viewpoint

Miss Amanda Preuss Made Transcontinental Tour Despite Difficulties

Trip in an Oldsmobile Took 11 Days, 5 Hours and 45 Minutes

WHERE there's a will there's a way, and this was never truer than when Miss Amanda Preuss, a stenographer in a law office at Sacramento, Cal., planned and made her transcontinental tour in an Oldsmobile. The plans started even before she had the car, but, as she said when asked where she would get one, she had not worked for several years in a law office for nothing. She appointed herself a ways and means committee of one, and her arrival in New York City 11 days, 5 hours and 45 minutes after leaving San Francisco is ample proof that the committee was an efficient one.

All was not plain sailing, by any means. In fact, to an outsider it might seem that the days prior to the "sailing" were the hardest of all, for just after Miss Preuss had obtained the co-operation of the Olds Motor Works she broke her arm while cranking an old car. This delayed the trip, but did not prevent it, and at 6 o'clock on the morning of August 8 she was checked out on her trip by Frank Herman, motor car editor of the San Francisco Call in Oakland, across the bay from San Francisco.

Hard Training Preceding Start

Six weeks of training preceded the start, and Miss Preuss found that she needed the training, for she had determined to more than cross the country; she wanted to do it as quickly as possible. She reports little trouble on the way. Tire troubles were of minor character: One blowout for the whole trip of 3,331 miles. She carried two spare tires, one of which remained idle. Goodyears were used throughout.

The Lincoln highway was followed. August 19 she reached New York City and was checked in by R. L. Sykes of the Brooklyn Citizen and other nwespaper men at the Times Square at 2:45 o'clock that afternoon. That day being Saturday, she did not call at the City Hall until Monday, at which time she gave the letter from Mayor Rolph of San Francisco to Mayor Mitchell to Acting Mayor Victor Dowling of New York.

The schedule of the trip is outlined by Miss Preuss herself:

"The starting miles were uneventful, the beautiful, hard, macadamized roads of California carrying me into Sacramento with ease and dispatch.

"As I approached the foothills of the mountains the road became steep and tortuous, twining ever upward and upward,

The woman in the case, Miss Amanda Preuss

from precipice to precipice. Around one curve after another I flew, giving the car more gas every time I glimpsed a little straight stretch ahead. I took some awful chances. However, I had absolute confidence in my car and so did not hesitate to run any risk.

"Passing over the Sierras, I negotiated three snowsheds, the last one at the summit, more than 7,000 feet above the sea. Coming out of this shed, the road drops 1,800 feet in less than a mile, curving wickedly toward Donner lake, in the heart of the mountains. Thanks to the car, I negotiated it safely.

"From then on it was easy sailing into Reno, where I arrived at 8:15 p. m. I had covered 270 miles the first day, including a mountain range 7,000 feet high, which I thought not at all bad.

"The next morning I started for Ely, Nev., passing through the Fallon Sink. It was plough, plough, plough, through heavy sand all the way. At one place, despite the magnificent pulling power of my eight-cylinder motor, which had carried me over the Sierras in high gear, I had to travel 14 miles in first and second speed.

"And my, but that desert was a lonesome place! Much of this part of my trip was rather tiresome. The country all around looked as though it had been painted with a giant whitewash brush. One alkali bed after another—and not a living thing to break the monotony.

"Five hours of travel in this alkali land brought me to Frenchman's Camp, consisting of one house and well. The well bears a sign, 'If you don't want to pay for this water, let it alone.' This, however, is not as inhospitable as it seems, as the water had to be hauled a great distance.

"I myself did not drink the water, as I carried a supply of my own to avoid stomach trouble. I bought some for the car, paying 5 cents for it. I needed less than a pint to fill the radiator, though I had traveled 150 miles through heat and deep sand.

"At 7 in the evening I reached Austin. I had made so little progress that I decided to go on, after buying some gas and oil.

"I made Eureka, the next stop, at about midnight, arriving with a suddenness that was surprising. The town lies deep down in a pocket of the mountains, and the descent into it is so steep that I didn't see it until I was already in its midst. It felt as though I had dropped off a mountain into town.

Getting a "Hand-Out"

"When I arrived the entire place was asleep, with the exception of a few men who were playing cards in the hotel lobby, which was also the bar. I registered over the bar and then told the combination hotel proprietor and bar-keep that I was hungry. Very obligingly he went out into the kitchen and fetched me a couple of hunks of bread—hunks is the word, as they were 2 inches thick—and some sliced cold beef. This I ate before an interested group of spectators and then stumbled up a long, rickety staircase to my room, where I slept soundly until morning.

"After Eureka, my next stop was Ely, where I was greeted by G. S. Hoag, the Lincoln highway consul, who is working very hard to place the roads out West in better condition. I did not stay long in Ely, eating lunch and then starting for the great Salt Lake desert.

"Seventy miles took me to Tippet's ranch, where I stopped for gasoline, at 55 cents a gallon.

"Before nightfall I made Ibapah and decided to call it a day's work, as I was pretty well tuckered out from my strenuous grind the night before. I slept like a log.

"Next day I was on the road again bright and early and stopped at Thomas' cabin for breakfast. I had developed a wonderful appetite by this time, and it seemed as though I couldn't eat enough. I had sliced pineapples, sliced peaches, four eggs, bread and butter, sliced ham and two cups of coffee, all in but a few minutes

Can she change a wheel? Watch her

more than it took to fill my car with gasoline. Asking Mr. Thomas for my bill, I nearly shouted with joy when he said '50 cents,' but my enthusiasm died a moment later when he continued, 'but the gasoline is 60 cents a gallon.' It seems that the precious fluid has to be hauled 75 miles by motor truck, which accounts for its high price.

"From this point the Lincoln highway skirts a desert, and the roads are very dusty. I got off on the wrong trail at one time and had to cut across an immense valley with nothing but a tiny ribbon of road on a mountain side in the far distance to aim for, to get back again. If I hadn't had confidence in my car, I would have become very nervous on this occasion.

"However, I made Salt Lake City that afternoon, and there still being some daylight left, determined to try for Evanston, Wyo., that night.

"Here, again, I was forced to do some rather reckless driving, the road being steep and winding, with mountainous gulfs and chasms on all sides, made especially dangerous by the fact that darkness soon fell. I made Evanston at 11 o'clock that night.

"The next day I plunged into the heart of the Rockies—and then it rained. All day I fought not only the grades, which were rough and steep, but rain as well. It was drive, slip, slide, bounce, twist, turn and bump. I look back on it now and wonder how the car held together.

"Coming into Cheyenne, I made some rapid mental calculations. According to my diary, in which I kept every detail of my trip, duly verified by residents en route, I had averaged less than 250 miles a day, when I had originally figured on doing more than 300.

"Something had to be done. Then and there I made up my mind that from Cheyenne on I would take the wheel and hang onto it until I dropped, sleep a little and drive until I had to quit again.

"The next day saw me on my way bright and early, and so eager was I to get along that I lost my way. Not having seen any Lincoln highway signs for quite a while I finally stopped a stranger an dasked, 'Where am I?'

"'Lady.' he replied, 'you're in Colorado.'

"'This is no place for me,' I said. 'I ought to be in Wyoming. How do I get out of here?'

"A few brief directions and I was on my way again, rejoining the Lincoln highway somewhere west of Pine Bluff, Wyo.

"All that day I drove, all that night and all the next day, arriving the following evening in Ames, Ia., after having covered 765 miles of my route in one stretch. The first day, after leaving Kimball, I made only two stops, outside of stops for gasoline—one at Big Springs, Neb., for lunch and the other at Cozad, Neb., for dinner.

"By the time I arrived in Ames, Ia., at 10:30 the second night, I had been on the road for practically 41 consecutive hours with but 6 hours of eating and sleep sandwiched in between. I had covered 2,086 miles of my trip and still had 1,245 to go. More than a third of my journey lay ahead.

"The next morning, therefore, I rose at daybreak and took to the road once more. This time I drove through to South Bend, Ind., a distance of 480 miles, driving for 23 hours and 46 minutes.

"I now had passed the hardest part of my journey. From Ames, Ia., on, the roads had constantly improved, and I expected even better. So I lunched at Fort Wayne and dined at Lima, O. The same night I made Canton, O., arriving at 2 a. m., after covering 328 miles.

"Early the next morning I was on the road once more, headed for Pittsburgh. Every so often I'd have to stop my car and pay 7 cents toll. Leaving Pittsburgh I was warned against the Alleghenies and, of course, looked for some bad grades. I traveled all that day and far into the night without seeing anything serious, and so, when I arrived in Gettysburg, where I was to sleep, I asked the hotel clerk when I would get into the mountains.

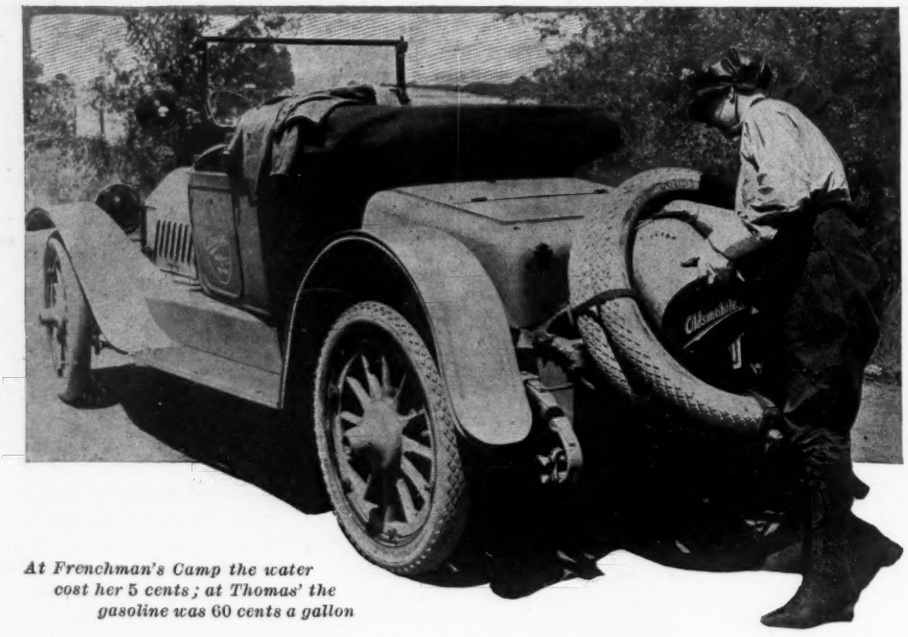
"'Why,' he said to me, 'you are out of the mountains.'

"The next day was the last of my trip. I had only 212 miles more to go and decided to leave New York about the middle of the afternoon. As I was leaving at 6 o'clock a bystander, learning my destination, said, 'You'll be lucky if you get into New York by night.' As a matter of fact, I made Times Square at 2:45 that afternoon."

The Woman Driver

The twentieth century motor car is built so simply and reliably that any woman can manipulate one with as much ease as she

What! a puncture? Well, who minds anyway, when they're dressed to play the part



At Frenchman's Camp the water cost her 5 cents; at Thomas' the gasoline was 60 cents a gallon

can an electric. This is what Miss Preuss tells Motor Age in answer to inquiries concerning the difficulties for a woman who drives her own car.

"The eight-cylinder motor car does away with a great deal of gear shifting, which is wearing on anyone driving a car of fewer cylinders," she says. "And I believe that a great deal of my success was due to the very little gear shifting I had to do, as it saved my strength to guide the car."

Miss Preuss changed her own tires and planned her costume to make the changing easy. She wanted to make tire changing for a woman as easy as it is for a man. In changing her tires, she had no trouble whatever in raising the car as she had a special jack, which required but slight pressure to do the work. The rims were demountable and it took almost no effort, she explained, to remove them, as the nuts were easily unscrewed, the punctured tire quickly slipped off and a pumped-up one adjusted. Her next stop was at a garage after changing the tire, so the garage man could do the real manual labor of repairing the puncture.

Taking Miss Preuss' few accidents as a criterion of what a woman driver could do alone, they show that, given reasonable distance from a garage or aid of another car owner, a driver need not be marooned at any time. A particularly severe bump incurred while in the heart of the Rockies one rainy day fractured a minor part of the braking mechanism. It was not so serious as to stop the car, and the journey was continued, with care, until the next day, when she reached an Oldsomobile service station at Cheyenne, Wyo.

The only serious accident was just out of Pine Bluff, Wyo., and had more to do with injury to a horse than to the car itself. Dumb animals are, as has been said, "unsartin' critters," and the big bay horse Miss Preuss met on her travels was no exception to the statement. The two, driver and horse, collided, for the horse refused to recognize the road rule of "pass to the left" and swerved unexpectedly as the car came up behind it. The front fender of the roadster was bent and the radiator later sprung a leak; the horse received a broken leg and had to be shot.

The freemasonry among motorists was shown here, as elsewhere on the trip. Another Oldsomobile owner lent his radiator at Dixon, Ill., when that on Miss Preuss' car became disabled. It was later replaced by a new one at the Oldsmobile agency at South Bend, Ind., so the borrowed one was returned.

What is the attitude toward a woman driver on a trip, one might ask? Out West, all seemed alive to the desire for a record, and nothing was too difficult for Miss Preuss to do. In the East it was different. Though the roads were, as a whole, better, everyone seemed afraid no more than 150 or 200 miles a day could be covered. Miss Preuss, however, had that happy ability to overcome adverse encouragement, and as a result her average was better than 300 miles a day.

All was not plain sailing by any means, and it would not be wise to advise every woman driver to attempt a cross-country tour alone. But what has been done can be done, and if a woman have the requisites for the endurance, persistence and so on, no minor considerations need prevent such a trip of her own. And, moreover, if women can make these transcontinental trips at the wheel and, as the saying is, "get away with it," there is that much more argument to the effect that a woman can be successful in driving and, to a certain extent, caring for her own car, if she so desires.

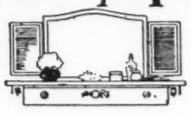
What Did She Wear?

Miss Preuss designed her own costume. It consisted of a khaki norfolk coat and riding trousers, puttees, tan heavy shoes, leather hat, goggles and driving gloves. In planning the costume, she had in mind the changing of tires. She took no skirts on the trip, she says, as she did not carry excess baggage.

"I reasoned that a woman wears trousers when she rides horseback; so why not wear them when she rides in a car?" Miss Preuss explains. "If women would once try them, they would always wear them on long tours, as they look so much neater and are much more practical and comfortable than skirts."

In such clothes punctures had no terrors for her.

Beauty Hints for the Woman Motorist



No. 13

IT IS a natural inquiry that often arises when women are among the party who are planning a transcontinental tour: Is it a hard trip? Miss Preuss, having recently made such a trip and alone at that, should be able to satisfy such inquiry when she tells of her own trip.

In the first place, she got ready before she started. She planned her clothes for comfort and tried to strengthen herself. To do this latter she not only drove a great deal, but she danced also. Next to driving she found this the best exercise. You may have some other thought on this matter; the main thing is to build up the constitution as much as possible so that more pleasure and more comfort may be possible.

She did hard days' work, but she stopped when she thought she was too tired to go farther. She carried her own water across the alkali beds to avoid stomach trouble. She ate plenty of nourishing food on the way.

The end of the journey found her little the worse for wear, though she had lost 17 pounds. The exposure in all kinds of weather had given her a deep coat of tan, though her skin, due to the use of nothing but cold cream, was in good condition. The tan, too, could have been prevented, but Miss Preuss is an outdoors person and does not mind that.

The only after effects of the trip were slightly swollen fingers, due, no doubt, to gripping the steering wheel so much of the time. The fingers remained puffed several days, but gave no serious trouble.

Dressing the Car Body for Winter

By Wallace B. Blood

OF all seasons of the year, winter with its cold and moderate, humid and dry weather combinations is hardest on the body finish of a motor car. An owner may start into the cold months with the body of his car plastered with an accumulation of mud and stains gathered in the wet driving of early fall, or he may spend a half day dressing up the finish on his car so that the care of it through the winter will be a simple matter. And that man that starts into the cold weather with a stained and muddy car is liable to leave it that way until spring rather than breast freezing atmosphere and an icy hose line.

What to Buy

Set aside a Saturday afternoon for a general cleanup, first laying in the following stock:

A can of cleaner. There are several very good cleaners on the market, some of a soft-soapy consistency, some in liquids.

A pint of quick-drying enamel. A good luster fender enamel will serve well. Several manufacturers are marketing a black filling liquid which will serve well to cover wood or metal. If your car is other than black get an enamel to match or if that is impossible buy a pint of high-grade spar varnish.

One small, round-tipped brush.

One can of body-polishing wax, or liquid polish.

One clean, soft chamois.

One can rim paint.

Plenty of soft rags.

A pint can of paint to match the wheels, or any new color you may wish to have on the wheels.

These materials, together with so-called elbow grease will enable you to touch up your car yourself and possibly avoid the cost of spring repainting. The work applies as well for the car which is to be stored for the winter as the one which is to be driven. Proceed as follows:

First of all hose the car, if a hose line is available. If not, wash it down with warm water, changing the water at frequent intervals. This hosing operation should only be done to remove the sand and grit and the major portion of the dirt. The spots and stains will come off later.

Dry the body thoroughly with soft cloths. Do not rub the cloths over the body any more than you can help. The hosing does not remove all the sand and grit, and one grain of sand rubbed across the body is going to leave an ugly scratch. Pat the wet places with the cloth until the body is thoroughly dry. This accomplished, you will notice that the finish is mottled here and there with a gray coating. Do not try to rub this off with the cloth.

Next apply the cleaner. In the soapy kind, or the rub-on liquid variety, apply the cleaner with a wad of soft cloth. Do not use waste. It will only leave threads sticking to the body which will be hard to remove. Rub the cleaner on with short strokes of the hand. Avoid long, sweeping strokes, because a bit of grit under the rag will make a scratch the length of the stroke. Better to make a short scratch, notice it, and clean the rag or use a new one.

This cleaning process, if done thoroughly is a tedious and tiring job. Every part of the body should be gone over. When the scrubbing is completed, the cleaner should be wiped off with a chamois. In most cleaners, after they have dried on they become powdery and wipe off very easily taking all dirt and oil stains with them.

Now comes the hardest job of all, one which we can truly say is seldom done properly because it takes more physical effort than a good many motorists are willing to exert. Stop and think of next spring's repainting bill, work up some enthusiastic pride in the looks of your car, and go after the polishing.

A polish which is lasting is one which applies a coating over the finish of the car, not one which merely shines up the finish that is already on. Something of a waxy consistency or which leaves a waxy deposit on the metal serves well as a subfinish. Sprayed-on polish is also good.

Applying Wax Polish

To apply a non-fluid wax polish, one has to rub it on much the same as in applying a non-fluid cleaner. Every spot of the finish must be touched and an even, thick coating applied. In liquid polishes the same even application should be observed. One of the best methods of applying wax is to wrap a piece of the material in a piece of cheesecloth, drawing the cloth into a bunch which may be held by the fingers without getting them covered with the polish. The rubbing will cause the wax to work through the cheesecloth imparting an even coating.

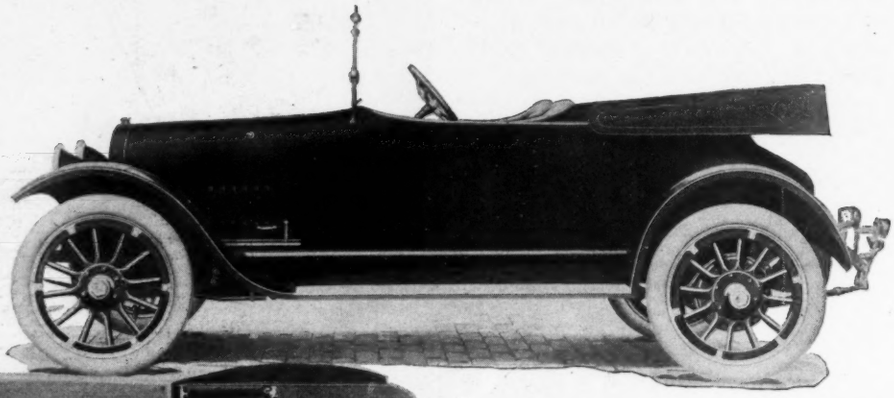
The finishing touch should be done with a chamois and this final polishing is a matter of hard rubbing until the wax is thoroughly worked in and a shiny finish results. The harder the rubbing the better and more lasting the finish. Once applied, the wax finish will last for a month or more and the second and consequent applications do not require the amount of work. A cleaner rubbed over the surface that has previously been waxed takes off the dirt very readily.

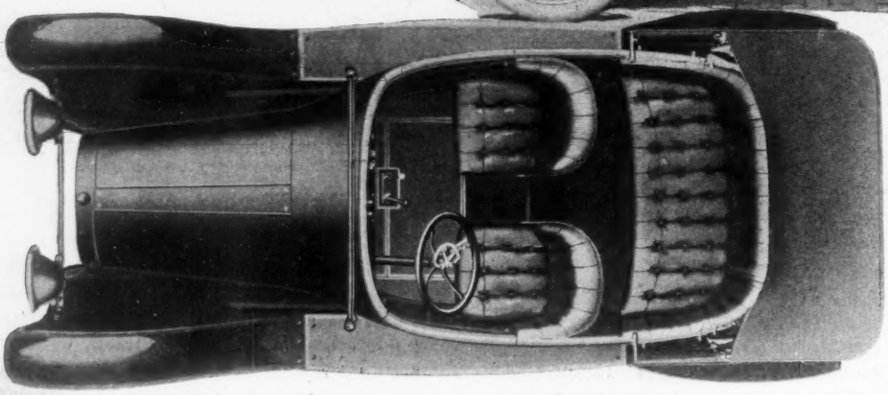
The polishing completed, it is now time for retouching the places on the body and fenders where the enamel has been worn

(Concluded on page 43)

Two New Sixes Offered by Auburn

Four Discontinued—Entirely New Bodies Including Four-Passenger Roadster





Above—Sweeping lines of four-passenger roadster on 1917 Auburn chassis. Left Seating arrangement of Auburn four-passenger

FOR the 1917 season, the Auburn Automobile Co., Auburn, Ind., is manufacturing two models, both sixes, new in motor size and body, the four of the past season being discontinued and the six being replaced by one of a slightly smaller and one of a larger bore. The bodies of both models are strikingly different than any of their predecessors, although the characteristic radiator shape is adhered to.

There is a model 6-39 at $1,085, either as a five-passenger touring, four-passenger chummy, or two-passenger roadster, with detachable tops for both the four and five-passenger models at $175 extra. The other six, model 6-44, lists at $1,535, either as a seven-passenger touring or four-passenger chummy roadster, with a detachable sedan top at $250 extra.

Both motors are L-head, the smaller having a bore of 3⅛ and a stroke of 5 inches and the model 6-44 a 3½-inch bore and 5¼-inch stroke. The former develops 23.44 horsepower according to formula rating and a claimed brake test of 39 to 41. The large six, with 303.1 cubic-inch displacement, has a formula rating of 29.4 and a claimed brake test horsepower of 45.

Motors Similar

The design of the motors is very similar, the difference being, principally, in size. In general arrangement the powerplants are of the type in which cylinders and crankcase are cast in a single unit. The cylinder head is cast separately, consisting of two parts, each being retained by ten $\frac{7}{16}$-inch studs. Two heads are used in place of one to insure a perfect joint at the head gasket. The construction is also a labor saver when it is necessary to grind in one valve.

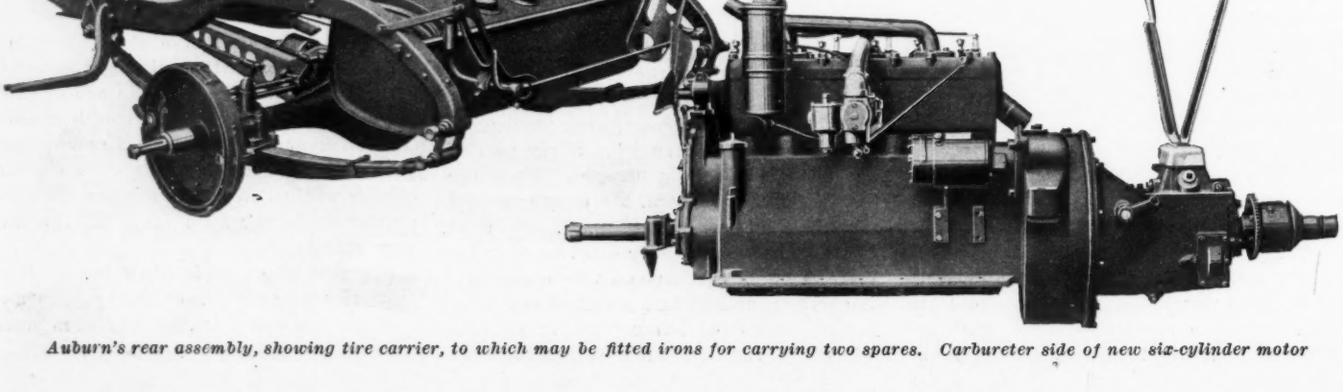
The flywheel housing is cast separately and at the rear end of the housing provision is made for carrying the gearset unit. There is a three-bearing crankshaft.

Pistons are of cast iron and fitted with three rings. The skirt of each piston is recessed in such a manner as to act as a scraper ring to prohibit an excessive amount of oil entering the head.

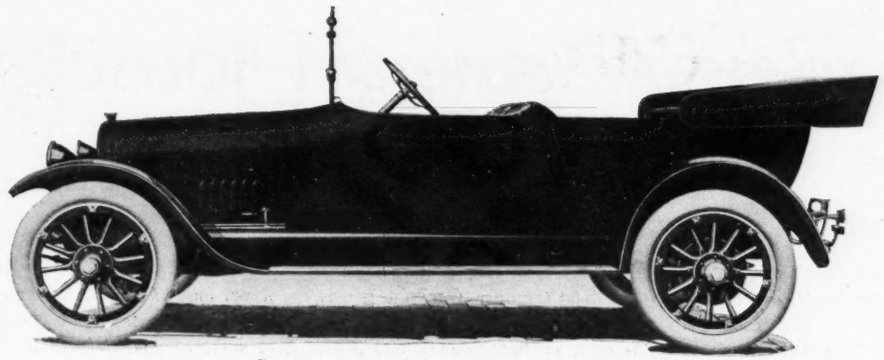
Timing gears are helically cut and are lubricated by an oil lead from the crankcase. The intake and exhaust valves are interchangeable, the heads of cast iron being welded to nickel-steel stems.

In line with present practice of reducing weight in the reciprocating parts, the usual type of push rod has been replaced in this model by small, light lever arms, which are carried on a shaft, this shaft mounted to a plate which forms a part of the valve-housing cover. The lower side of the lever arm rides on a cam at the end opposite the supporting shaft, while the lower end of the valve stem rides on the upper side of the arms. This construction allows efficient circulation for the entire valve mechanism, as there are no walls between the crankcase and the valve housings.

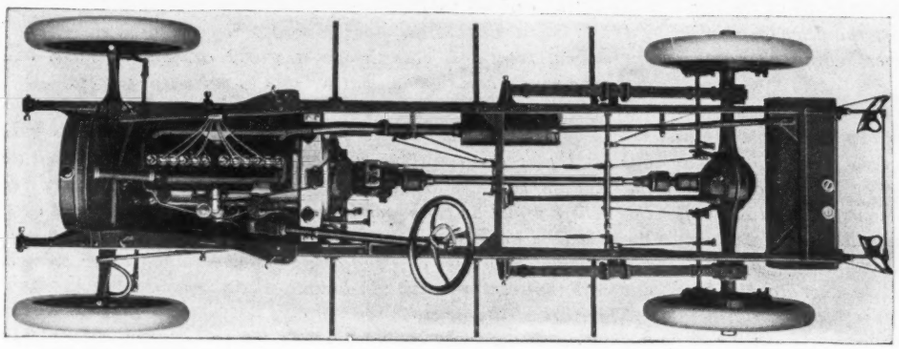
Lubrication is a combination force-feed and splash system. A horizontal plunger pump driven from the camshaft by an ec-



Auburn's rear assembly, showing tire carrier, to which may be fitted irons for carrying two spares. Carbureter side of new six-cylinder motor



Seven-passenger body on Auburn model 6-44



Plan view of Auburn chassis showing rear cantilever equipment

centric forces oil through copper tubes direct to the timing gears are over the main bearings. It then drives back into the oil pan, thus maintaining a proper level for the splash lubrication of pistons and connecting rods.

The electric system for starting, lighting and ignition is supplied by a generator driven from the pump shaft. The starting motor is installed back of the flywheel housing so that its pinion meshes with a hardened ring gear on the rim of the flywheel.

The clutch is dry-disk, three-plate, and the gearset conventional, three speeds forward. Drive from the gearset to the rear axle is through a propeller shaft fitted with two universals, torsional strain being taken up by the use of a cast steel torque arm, the front end of which is spring mounted.

In both models the steering gear is worm and nut, semi-reversible, with the steering column at the left side. The gear shift and emergency brake levers are at the center. The service brake pedal actuates contracting bands on the external face of, and the emergency screws expand within the drums on the rear wheels. In the small six the wheelbase is 120 inches, with a road clearance of 10½ inches and in the larger car there is a wheelbase of 131 inches with the same clearance.

The five-passenger body on the 6-39 has four full U doors, all flush with invisible hinges. Latch handles are flush with the inside of the door. The rear compartment is fitted with foot and robe rails and the floor carpeted. The floor of the driving compartment is linoleum covered, aluminum trimmed.

The four-passenger tete-atete roadster is an innovation as far as Auburn is concerned. The front seats are divided and the rear seats will not only accommodate two large passengers, but afford plenty of leg room. The rear deck is sloping with a door on the right side fitted with a lock.

The seven-passenger body on the 6-44 embodies the double cowl. The front seats are divided and the spare seats fold into the back of them, when not in use. The four-passenger tete-a-tete on this chassis is very similar to that on the smaller model.

Dressing the Car Body for Winter

(Concluded from page 41)

off. This retouching should be done after the polishing is completed, because at that time one is sure that all dirt has been removed, and painting or enameling over dirt will not help the appearance of the car.

Quick-drying enamel will dry over night, as will the preparations especially prepared for this retouching. The wax should be removed from the places to be retouched by dabbing them with a piece of rag soaked in gasoline. With a fine, round-pointed brush one can enamel over the smallest scratches. The enamel flows evenly and the mark will not be noticeable. The writer has painted a body complete with this enamel and found that the material flows evenly, even if the brush work is rather careless.

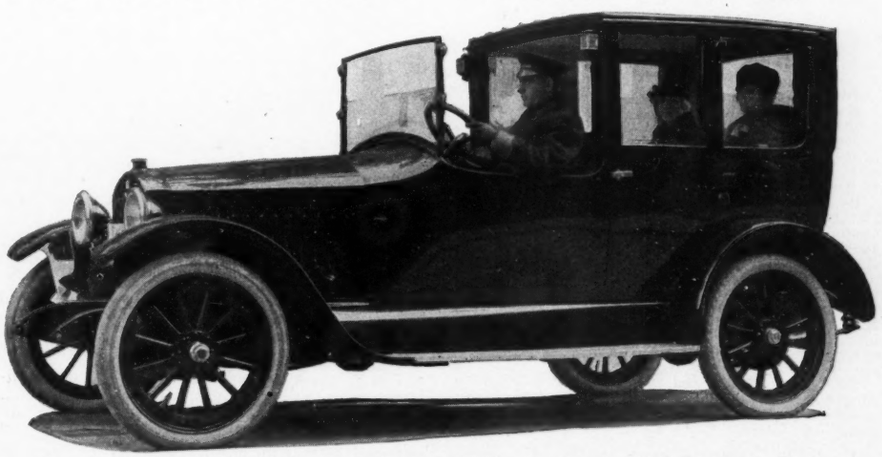
An application of rim paint may and probably will save the price of a new tire. Winter driving, through wet roads, means rims that are often soaked in water and the resultant rust, when against the tire, will rot the rubber and fabric and end in a rim cut which you cannot account for. The rims should be dressed at the same time the body is finished. If you put it off you will never do it. If you are unable to purchase a good rim paint in your locality, cover the rims with paste graphite.

Painting the wheels is up to you. Owners are presenting a cry for individuality in motor cars, and if you must drive your old car why have it like all the rest? One well-applied coat of paint on the wood rims and spokes is going to improve the looks of your car and, incidentally, preserve the wood and keep it from cracking.

WOULD LIMIT TRUCK LOAD

Los Angeles, Cal., Nov. 4—Los Angeles is another city that contemplates drastic legislation aimed at the operation of motor trucks. One proposal is to limit the gross weight of truck and load to 24,000 pounds and trailer and load to 7,500 pounds.

Truck owners, operators and dealers are opposing the proposition. They advance the claim that such limitation would prohibit the use of 6- and 7-ton trucks and there would be a decided economic loss. There has been a movement under way here to build up the use of tractors and trailers in transportation of supplies from Los Angeles Harbor to the city proper and it now is said that this effort will have been wasted if the legislation is effected unless a special truck road is built.



Liberty brougham, a small-edition town car with graceful lines

The Readers' Clearing House

What Is Wrong with Racing?

LINCOLN, Ill.—Editor Motor Age—I have been reading in the columns of Motor Age "What Is Wrong with Racing?" and cannot help but make a few remarks from the viewpoint of the spectator.

Racing today is a high perfection of the sport in one sense of the word. But to be viewed from the standpoint of the spectator that pays for it, it is too deep for him. He cares nothing about the special built racing machine which costs many times the price of a good every day car made by some firm he has never heard of and the word special tagged on behind it.

Peugeot has shown the world that it can build a racing car of exceptional ability, a wonderful machine. But we cannot buy them for use. They mean nothing to us and we are very tired of all the drivers of merit thinking they must have one or be left out. In fact, we do not care to spend our time and money to go to a big race, and see four or five Peugeots and a bunch of specials turn around a track at about 100 miles an hour. I have heard people ask about some of these cars that race who are absolutely ignorant of the origin of the cars, never heard of them, never saw one on the street, never saw an advertisement of one of them and probably never will. What is more they take no interest in the race and resolve to stay away next time, and by the size of the crowds it looks like they are doing it.

The crowd at the last meet at Chicago demonstrated this fact without a doubt. With the world's best drivers and fastest cars, good fall weather, with a city like Chicago and vicinity to draw from the attendance was pitifully small, which must have been very discouraging to the promoters.

To make a success of anything you must please the customer. This style of racing does not seem to do it.

In the days of stock car racing we all know what the attendance was. Even the farmer could draw five dollars for parking in his field.

There was much more interest then than is shown now and people were not so much enlightened on the motor car industry as today. But they knew the cars. They like to go to the different camps and give them the once over. Here was the Buick and Chalmers, Locomobile, Pope and a score of others. You were interested; you knew the cars, probably owned one yourself, or some of your friends did; made you feel a sensation in watching them go by which is impossible in the cars of today.

While it is true that the stock cars of today would be slower than the special creations, nevertheless it would cause enthusiasm and draw the people and that is what it takes to make it a success.

If more people like the Hudson were in the game, it would be more worth while. They have made a wonderful showing this year against the special creations, and what is more, are not entered by the Hudson factory. If there was some class and protection for them there would be more men like Vail coming forth with fast cars. As it is they know it is a losing game as there is no chance of winning against such cars as Peugeots, Duesenbergs and other specials and cars that cost a fortune to build.

There are plenty of stock touring cars today that will run 70 miles per hour. These cars, equipped ready for racing, would be plenty fast enough for the thrills and still look more like a race than a parade.

Imagine if you can a big race of 300 miles on the Chicago speedway; $30,000 purse, with such an entry list as the following: Hudson, Marmon, Packard, Cadillac, Mercer, Stutz, Chalmers and some more of the other fast cars, all lined up with such drivers as Resta, De Palma, Aitkin, Rickenbacher, and others. Don't you believe you would close up the office for the afternoon and go out? I believe you would, for it would be a real treat as compared with the singsong racing of today.

I believe the most exciting race I ever saw in my life was a 3-minute trot on a ⅓-mile track, three best in five, between a lot of horses that the thousands of us in attendance all knew, and they never beat 3:10, and it took five heats to decide it; but we knew them and it was a whipping finish in every heat.—Earl Wasson.

MISSES AFTER GRINDING VALVES

Possibly Grinding Tool or Seater Leaves Burr Which Lifts Valve

Lafayette, Colo.—Editor Motor Age—I have a puzzle in a 1915 model Ford. I regrind the valves every 1,000 miles and ream the seats and face the valves with a facing tool and adjust the clearance between the tappets to about 1/64 inch, clean the timer and oil it, get all the gaskets tight, cylinder head bolts tight, spark plugs all clean and the points about 1/32 of an inch apart. It has a Kingston carbureter, regular Ford coils, in fact everything standard. The engine will jerk on high gear if throttled below 15 miles an hour. When starting after putting in high gear it does not always do this. Once in a while till it runs about 100 miles, then it gradually ceases jerking. The car does this every time after I grind the valves. It has plenty of power after driving a few hundred miles. The rings appear to be in fine shape, in fact the whole engine is the same as it was when new. The gasket has no leaks from one cylinder to another.

2—How can I change my 1915 Metz 22 roadster into a gear-drive by using a Ford rear axle? Could I get a gearset to put in a place under the foot load so the shifting lever would come in the right place? Would this be much of an expense to change? Could I exchange the parts that I had to remove for the gearset? From what make car would I get the gearset to fit this car? I can do all the work myself, am a machinist and can make a few parts myself such as the extension coupling between engine and gearset, etc.

3—Would it improve the riding of a Ford by lengthening the wheelbase 15 inches and cut down the frame with a speedster body on it?—George L. Vette.

1—It is possible that, in your valve-grinding operation, you do not make perfect seats on all the valves. That is, your grinding or seating tools leave a small burr or unevenness somewhere on the valve seat that has to become pounded down by a few hundred miles of driving. This is the only explanation Motor Age could give for such a truly peculiar trouble.

2—It is strongly advised that you do not attempt such a change. The expense involved would probably be more than you realize. Remember that you would be obliged to build some kind of a support for the new gearset, connect it with the motor through a special set of shafts with a universal between, insert a new drive shaft from the gearset to the rear axle with another universal, provide some method of taking care of the torque, either make up expensive castings to anchor the Metz springs to the Ford axle or make up a special support to anchor the Ford spring to the Metz frame. All told it would be an expensive proposition with the success doubtful.

3—It would undoubtedly improve the riding qualities to lengthen the wheelbase. We do not know what you mean by cutting down the frame. A speedster body is often harder riding that the touring or roadster body, depending on how the reduction of weight is taken care of in the springs.

Communications Received and Inquiries Answered

George L. Vette	LaFayette, Colo.
L. Pedolty	Mason City, Ia.
A. J. Bonem	Chicago
L. V. Newton	Chicago
F. C. Perry	Greensboro, N. C.
G. G. Hill	Columbia, Ky.
J. K.	Seward, Neb.
R. B. Benecke	Brunswick, Mo.
O. W. Blaricon	Wichita, Kans.
D. A. Nobles	Aurora, Ill.
O. M. B.	Escanaba, Mich.
J. S. Clark	Saskatoon, Cal.
Wm. F. Chisholm	Delhi, N. Y.
F. A. Bradshaw	Rochester, N. Y.
J. T. Lowe	Mt. Vernon, S. D.
W. H. Davis	Shreveport, La.

REBUILDING A FORD FOR RACING

Best Gear for Track Work—Makers of Special Bodies

Mason City, Ia.—Editor Motor Age—In rebuilding a Ford car into a racer, is a 2 4-7 to 1 gear ratio better for fast work than a 3 to 1 ratio? Where can either be purchased?

2—Is the kerosene carbureter used on a Ford car in the recent race at Chicago being manufactured? If so, where can one be purchased?

3—Kindly give the names and addresses of

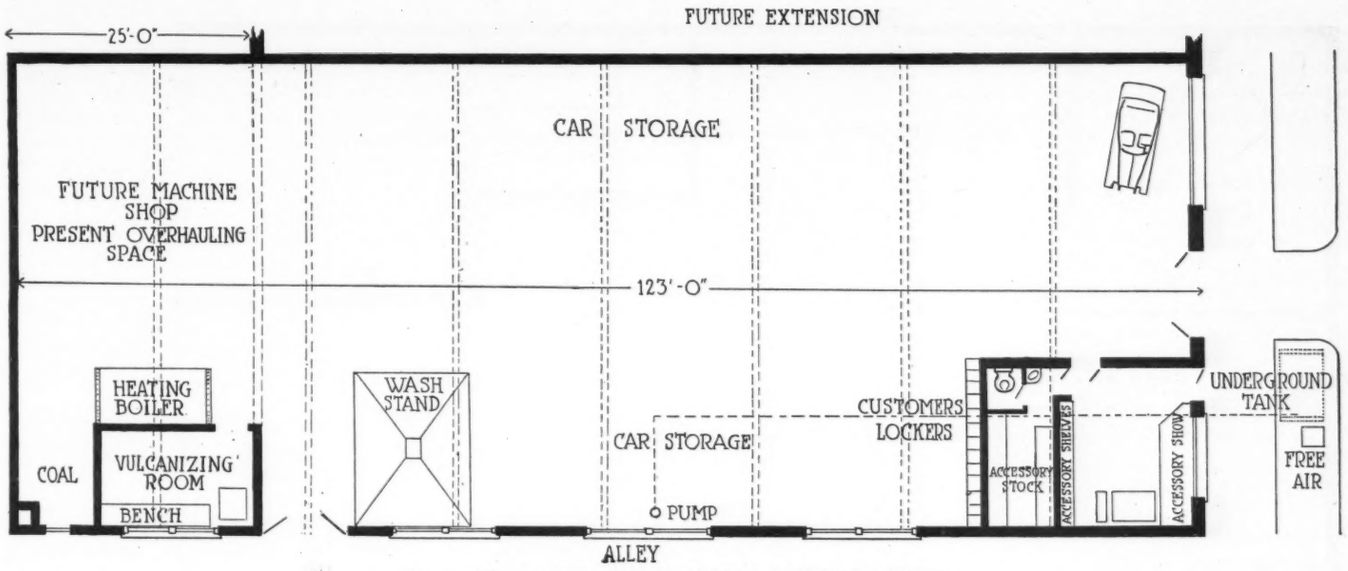


Fig. 1—Plan for garage with provisions for future extension

concerns manufacturing racing bodies for Ford cars.

4—Would it be advisable to set the valve timing ahead? If so, kindly give a good timing for speed work that will pull good as slow as 10 miles per hour.

5—Where did Mr. H. B. Wilson, Dewitt, Ill., purchase his body and radiator, or were they special jobs? Could this body be attached without lowering the steering wheel?

6—Where can I procure a speedometer that will register 70 miles per hour for a Ford car?

7—Kindly give the speed of the following cars: Monroe speedster, Buick Light Six, Scripps-Booth Four and Eight, Maibohm, Empire Six, Haynes Six, King Eight, and Lexington Minute-Man-Six.—L. Pedolty.

1—Depending on what kind of racing you intend to do. If for board track or good mile dirt track work, the higher gearing is best. For half-mile tracks the 3 to 1 ratio would serve better, as it would allow quicker pickup after completing the turns.

2—It is not on the market yet, but probably will be in the near future. A letter addressed to Mr. Duntley, care Chicago Pneumatic Tool Co., Chicago, would probably bring you some information regarding it.

3—Champion Racer Co., 411 S. Lincoln street, Chicago; Universal Car Equipment Co., Detroit; New Haven Carriage Co., New Haven, Conn.; Detroit Auto Products Co., Detroit; Auto Remodelling Co., Chicago; F. A. Ames Co., Owensboro, Ky.

4—There would be no great advantage in setting the valve timing ahead. Special camshafts, in which the cams create a sharper opening and closing, are more advantageous for speed purposes.

5—Champion Racer Co., Chicago. The body is designed for a lowered wheel.

6—Any speedometer maker.

7—There are no stock car official records on any of the makes you mention.

GARAGE DESIGNED FOR ADDITION

Motor Age's Idea of Building to Fit Reader's Specifications

Chicago—Editor Motor Age—Publish a garage plan that will utilize to the best advantage a vacant lot 141 feet by 123 feet. One end of the narrow side faces a residence street, the other an alley. I would like to build on the 50 by 123 feet nearest the alley first, and if that paid well to build later on the corner rectangle facing on a business street which borders on one side of the lot and the residence street above mentioned.

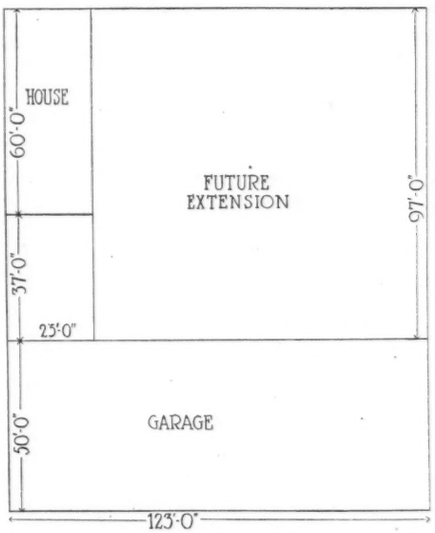


Fig. 2—Plot of land upon which garage shown in Fig. 1 is proposed to be built

Facing the residence street, on the corner of the lot opposite the business street is a dwelling house 60 by 25 feet.

In the event that the results were not what I wished for in the business of the small garage, I would build an apartment building on the corner instead.

I intend to have a small office in front; also space for the sale of accessories, and am going to do tire repairing and general overhauling—not machine work at first. Please provide for these functions.—A. J. Bonem.

Fig. 2 illustrates the plot of ground as you describe it, with the first garage located on the rear of the lot and the contemplated extension built from there out to the residence street.

Fig. 1 represents Motor Age's idea of what would constitute the best layout for the garage you contemplate building. The general layout is given without dimensions, as you probably have ideas of your own as to the size of the office, etc. You will note that the office, stock room, customer's lockers, wash stand, vulcanizing room, etc., are all located on the side of the building facing the alley. This will give plenty of light after the extension is put on. Furthermore, it will permit a straight driving space for incoming and outgoing cars which is a feature that cannot be overlooked to avoid clutter and difficulty in handling cars.

Advise No Ammeter in White

Chicago—Editor Motor Age—I have a 1915 four-cylinder Maxwell touring car, model 25, having a Simms magneto and Gray & Davis starting system. In the starting system is a circuit on which are four dry cells. As this circuit is connected, I do not understand its function when the motor is cranked by hand.

2—I also have a 1913 four-cylinder 30-horsepower White car which I am desirous of equipping with an ammeter. Will you kindly furnish a circuit drawing of this?—L. V. Newton.

1—The magneto is a low-tension type and will not generate a starting spark when the motor is thrown over by hand. It is to generate this spark at slow speed that the batteries are used.

2—Inasmuch as this model carried a single-unit system where current to start the motor as well as generated current passes through the same wire, it is not advisable to attempt an ammeter installation, because the very high voltage required to start the motor, passing through the ammeter, would put the instrument out of commission.

SPECIAL PARTS IN HUDSON RACER

Vail's Super-Six Reconstructed From Stock Car—Changes Given

Greensboro, N. C.—Editor Motor Age—Kindly give the specifications of the Hudson Super Six racing car used in the Sheepshead Bay races.

2—Is this car a stock car or special build?

3—What ratio is used?

4—What make of rear axle, ignition are used?

5—Has this car a special camshaft?—F. C. Perry.

1—The car was rebuilt from a stock car purchased from the Brooklyn, N. Y., Hudson agency. The frame is standard except that 20 inches has been cut out of the middle, just back of the gearset and the frame welded together again with reinforcements on the inside. The front and rear springs have been flattened out and leaves removed. The axles are standard with Timken bearings throughout and the gears used are stock gears supplied by the factory, being 2.61 to 1 on high. All

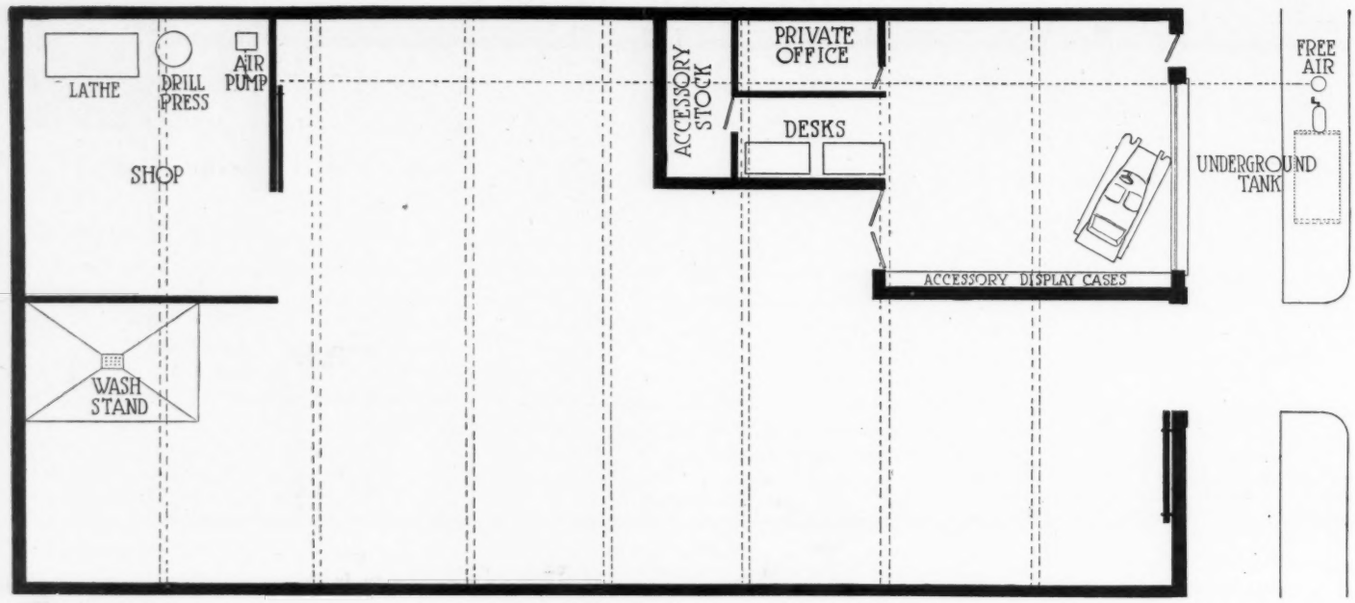


Fig. 3—Plan for garage to be built on 50 by 100 foot lot

parts of the motor with the exception of the pistons are stock parts. The pistons, while of standard design are of Leavitt magnalite metal. The camshaft and timing, the valve springs and valves and push rods are stock. The valve springs have been increased in pressure by introducing washers between the cylinder casting and the top of the spring. The standard carbureter is used in connection with the standard cylinder block. The Hudson export type of cylinder head for metric plug sizes is fitted. The clutch, gearset, gear shift and steering gear are all standard Hudson equipment. The engine is fitted with the standard Delco starting and lighting system throughout. The radiator is smaller than standard and has no fan behind it. The hood and body, are made of sheet aluminum. The exhaust pipe is special, coming outside the hood as is practice in racing cars.

2—A made-over stock car.

3—2.61 to 1.

4—Timken rear axle, Delco, battery and distributer ignition.

5—No.

OIL PUMPS IN CARBONLESS MOTOR

Trouble Develops Only When Motor Has Been Cleaned Out

Seward, Neb.—Editor Motor Age—I have always had trouble with the exhaust valves on my car fouling, sometimes as often as every 100 miles. Last spring this suddenly stopped and I did not have a dirty valve all summer until about a month ago when I cleaned the carbon out of the four cylinders. Since then I have the same trouble.

I have always made it a point to clean the carbon out every winter, until last winter, when I did not get around to it. Do you think that the higher compression due to the carbon kept the valves from fouling? Would increasing the compression by putting plates on the pistons stop the trouble again?

I have a set of non-leaking rings in the motor and there is no leakage past the pistons.

I soldered an old tire valve in an old spark plug and then tested the compression with a tire gauge. I only get between 45 and 50 pounds compression. Does Motor Age think this gauge is accurate for this work? It tallies with other tire gauges.—J. K.

Although it would take an internal examination of your motor to give a proof of what should create such an unusual trouble, it is our supposition, on the face of your statement, that the carbon, when worked into the rings, serves to hold the oil down from the top of the cylinder; when cleaned out, the oil slips past the rings. You state that you have non-leaking rings fitted. This is not the proof of the pudding. Non-leaking rings may leak as much as plain ones if they are not properly fitted to the pistons. Did you change the grade of oil you were using, after you had overhauled the motor? Do not try to fasten plates onto the top of the pistons. It is an unsatisfactory job at the best. Look to your rings and the fit of the pistons.

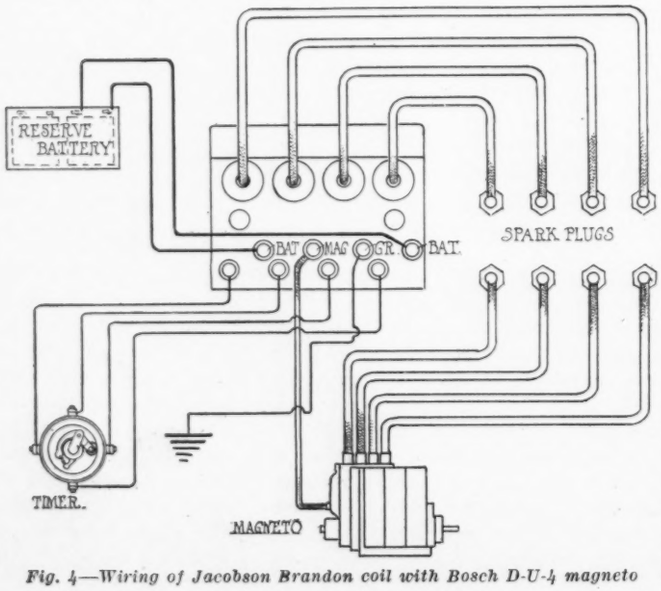


Fig. 4—Wiring of Jacobson Brandon coil with Bosch D-U-4 magneto

The gauge you have constructed should give accurate compression figures. You do not state what make of car you have or we would be able to tell you how near these compression figures are what they should be.

6-VOLT HORN AND 12-VOLT BATTERY

Connection with Half of Cells Equalized by Spotlight

Columbia, Ky.—Editor Motor Age—I have a Dodge car which is equipped with a large size 6-volt Sparton electric horn. The 12-volt battery was too strong and I drilled a hole in the middle connection and made a connection on three cells to the horn. I also have a 6-volt spot light on the other end of the battery making three cells to each one. Will this injure the battery and is it a good circuit?

2—The horn blows well when the motor is cold, but when the car has been run awhile the horn has a rattling sound and is not good. Does the heat effect it, and how can I remedy it? It is under the hood.—G. G. Hill.

1—The connection is mechanically all right, providing you equalize the drains on the current from each set of cells.

2—Possibly, if the horn is subjected to considerable heat, expansion of some of the parts will make a difference in its operation. The remedy, in this case, would be to move the horn away from the heat or wrap it with asbestos.

GARAGE ON 50 BY 100 FOOT LOT

Plan Given With Efficient Layout For Particular Space

Brunswicke, Mo.—Editor Motor Age—I am contemplating the erection of a new garage upon a lot approximately 50 by 100 feet, in the middle of a block, without an alley in the rear, and would like to have suggestions. Please bear in mind that I wish to have space in front for a suitable show, likewise space for a few accessories. The gasoline and free air I expect to place outside of the building.—R. B. Benecke.

In Fig. 3 you will find a layout for a garage of the size you mention. In the from of the building is a display room large enough for two or three cars with display windows for accessories on the

front and side. Behind this display room is office space with a closet for accessory stock in the rear. The shop is located in the rear, where it should be and here is placed the air pump which is piped to the free-air line in front. Do not make the mistake of placing a noisy air pump up against the office or in the front of the garage, merely to save pipe. The noise is well muffled in the back end of the building. Customers do not care to yell when they are talking business. A one-story structure on these lines could be constructed for a sum between $2,000 and $3,000.

WIRING J. B. COIL AND MAGNETO

Method of Timing Bosch D-U-4 Explained —Installation Diagram

Wichita, Kan.—Editor Motor Age—I have a 1910 model 20 Hudson which is equipped with a Jacobson-Brandow Co. coil box and a Bosch D-U-4 magneto. Kindly advise me how to wire it, beginning with the batteries, also how to time it.—O. W. Blaricon.

The wiring of this equipment is well illustrated in Fig. 4.

In timing, observe the following: The magneto should be secured in position with the driving gear or coupling loose on the armature shaft to permit the armature to rotate by itself. The distributer plate should then be removed by depressing the holding spring, and the magneto interrupter exposed by the removal of the interrupter housing cover. The engine should then be cranked until the piston in No. 1 cylinder, that is, the cylinder nearest the radiator, is at top dead center of the compression stroke. The timing control arm of the magneto should then be placed in the fully retarded position, that is, the spark should be fully retarded, which is accomplished by turning the control arm and the interrupter housing as far as possible in the direction in which the armature will be driven.

The armature should then be revolved in the direction in which it will be driven, which may be accomplished by means of the exposed distributer gear. The interrupter should then be closely observed, and when it is seen that the platinum contacts are in the act of separating, the driving gear or coupling should be secured to the armature shaft. This, of course, applies to the contact for No. 1 cylinder. In tightening the nut to secure the gear or coupling in position, great care should be taken not to alter the position of the armature. This will insure correct timing.

OIL PUMPING WITH ALLOY PISTONS

Clearance Necessary to Provide for Expansion Differences of Metal

Aurora, Ill.—Editor Motor Age—I have a 1916 model, eight-cylinder Oldsmobile roadster which has been run 1,500 miles, and am having trouble with the spark plugs missing.

The car runs for a few hours after the plugs are cleaned without missing and then seems to clog up and two or three cylinders will miss alternately. At times some of the cylinders are very oily, although I have kept the oil pressure to from 10 to 13 pounds. The spark seems rather thin, although the battery is kept fully charged. There is also a knocking sound in the motor, although there are no loose bearings.

The pistons in this car are of aluminum, and to this I attribute the oily condition of the cylinders, since the great difference in the expansion between aluminum and iron must at certain temperatures leave room for the oil to work up in the cylinders. Could Motor Age suggest a remedy for this condition, and recommend a spark plug that will operate in an oily cylinder?—D. A. Nobles.

The trouble undoubtedly lies in the fit of alloy pistons. As you state, the difference in expansion in aluminum and cast iron necessitates a considerable clearance. With the motor cold, the oil will pump; with it heated the trouble is minimized. If non-leaking rings are not already a part of the equipment, it is advisable that a set be installed. In some particularly obstinate cases of these kinds, non-leaking rings have been installed with enough clearance under them to allow the insertion of a thin felt washer.

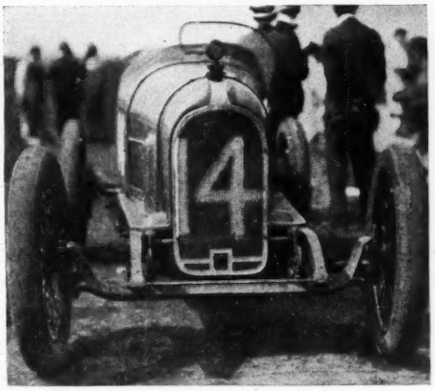


Fig. 5—Front view of Vail's Hudson racing car, showing special radiator

STEAM AND GASOLINE COMPARED

Both Types of Fuel Burners Have Their Characteristic Advantages

Saskatoon, Cal.—Editor Motor Age—Where could I obtain an impartial statement of the advantages and disadvantages of the steam car as compared with the gasoline car?

2—Kindly give the names and addresses of firms making steam cars.

3—Are there any special car bodies made for the camper or traveler?—J. S. Clark.

1—One of the objections to a steam car is the time necessary to generate steam before the car can be started. Another is the danger of freezing in cold weather, which, however, is a danger which may be eliminated by an owner who understands his car. Another objection is the fact that there is such a scarcity of steam cars that the average garage repairman knows nothing about them and, in attempting a repair job, is liable to do more harm than good.

One advantage is the extreme simplicity of the motor in comparison with a gasoline motor. Other advantages are a range of flexibility and an evenness of power at all speeds that few gasoline cars can approach, freedom from motor carbon, no ignition or carbureter troubles, no gears to shift, direct drive of motor to rear axle eliminating a drive shaft assembly.

2—General Engineering Co., Detroit; Stanley Motor Carriage Co., Newton, Mass.; Louis S. Ross, 38 Crafts St., Newtonville, Mass.

3—See the description and illustration in the Accessory Corner of this week's issue. There are no makers of special camping bodies, to our knowledge. There are, however, several trailer camping outfits and several types of folding beds which may be installed in the car itself.

CAR STARTS HARD WITHOUT CAUSE

Suggested That Low Grade of Procurable Gasoline Is Cause

Escanaba, Mich.—Editor Motor Age—I have a Kissel Kar, six-cylinder, having two in a block, with a 4¼" bore and 5¼" stroke, Mea dual magneto, Mea coil, five dry cells for starting. The magneto is low tension. I have had the car 11 months. It has always started fine until about 1 month ago, when I could not get the engine started until the cylinders were primed. It will start on spark without raising the self-starter.

This car has a Rayfield model S carbureter. When the engine does start it runs fine, idles smoothly, accelerates fine. I have taken out the spark plugs, cleaned and tested them, get a good spark from them all. Some time ago a man from the Kissel factory cleaned the breaker points for me. What would cause the engine to act this way?—O. M. B.

It occurs to us that the present grade of gasoline which is obtainable in your city is decidedly inferior to what it was several months ago. This is the case throughout the country. This heavier gasoline is just what would make starting difficult, although the motor would operate well when warmed up.

Known Quantity

Delhi, N. Y.—Editor Motor Age—State how one may obtain the correct horsepower rating of a gasoline motor.

2—Does Motor Age consider the Enger Twin Unit Twelve a car of service, or is it merely an experiment as yet?

3—What is the firing order of the multiple cylinder cars?—William C. Chisholm.

1—To find the N. A. C. C. horsepower rating use the following: Cylinder diameter times cylinder diameter times number of cylinders divided by 2.5.

2—Yes. Has been on the market for over a year.

3—There is no standard firing order. It varies greatly in the different makes. See answer to inquiry of E. S. Waterman, Flint, Mich., in last week's issue.

Play in E. M. F. Steering Gear

Rochester, N. Y.—Editor Motor Age—I desire information in regard to how I might take up the play in the steering post of a 1911 E-M-F. There is fully a quarter turn in the steering wheel before the turn has any effect on the wheels.—F. A. Bradshaw.

1—The steering gear on this car is not adjustable. To take out the play it will be necessary that you renew the worn parts.

Cannot Combine Two Batteries

Mt. Vernon, S. D.—Editor Motor Age—Please illustrate how to use a set of batteries in a Saxon four-cylinder runabout for ignition, independently of the storage battery in the car, so that you could use either of the batteries for ignition and show method of wiring same.—J. T. Lowe.

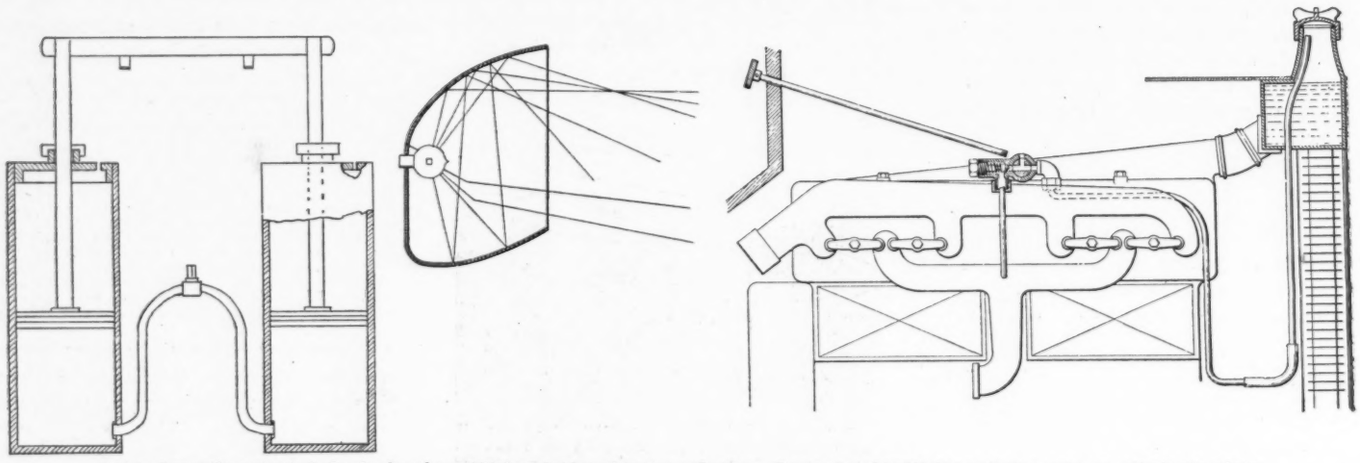
This cannot be done, unless a double system of ignition is installed and this would not be practical.

Wants to Get Pistons

Shreveport, La.—Editor Motor Age—Where may one obtain pistons 3¾ by 5, similar to ones used in Hudson No. 20, 1911 model, that is, a light piston, wristpin hole 1 inch, center of hole 2⅝ from top of piston? Piston pin put in stationary in piston, held by small set screw bearing on pin; inside of piston 2⅛.—W. H. Davis.

1—Refer to the clearing house advertising department in this issue for companies specializing in piston production.

The Accessory Corner



Left—Recently patented shock absorber utilizing fluid cushioning. Center—Design of headlight reflector said to eliminate glare. Right—Valve which feeds vapor from radiator to motor

Spotlight and Trouble Lamp

A SPOT lamp and trouble lamp combined in a neat appearing and very substantial assembly is being marketed by the Mechanical Utilities Corp., 5 N. LaSalle street, Chicago. Changing from spotlight to trouble lamp is merely a matter of unscrewing a gnurled screw pulling the spot lamp from the bracket and carrying the lamp anywhere it is needed about the car. There is 14 feet of cord wound within a compact container and this cord operates against the tension of three steel springs, one against the other. No matter how far the cord is pulled out, the spring tension remains practically the same. Furthermore, the cable may be locked against the springs at any point and again released by a slight jerk, much the same as in a curtain roller. The universal action of the spot light is provided in one direction by the taper joint which is disconnected when a trouble lamp is wanted, and in the other direction by another and similar joint within the lamp itself. These taper joints are brass against steel, giving a good friction surface and are readily adjustable. The lamp shell is made of heavy material; the reflector is silver plated. The price is $7.50.

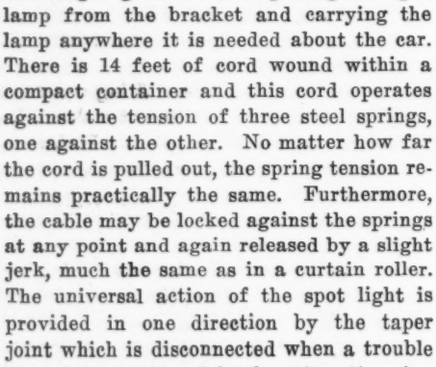
Substantially combined spot light and trouble lamp

Air Cushioning Shock Absorber

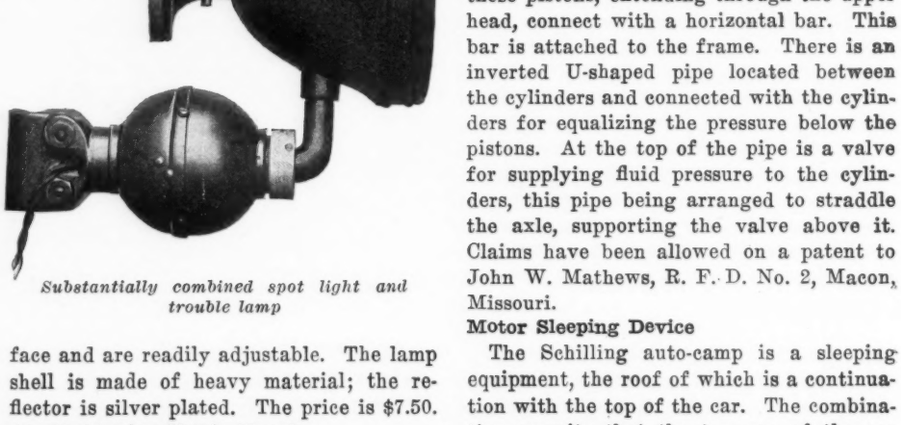
This is a shock absorber including a pair of verticle cylinders designed to be located at the spring centers. The cylinders are provided with integral heads at their lower ends and removable heads on top provided with ports. There are pistons within the cylinders and the rods from these pistons, extending through the upper head, connect with a horizontal bar. This bar is attached to the frame. There is an inverted U-shaped pipe located between the cylinders and connected with the cylinders for equalizing the pressure below the pistons. At the top of the pipe is a valve for supplying fluid pressure to the cylinders, this pipe being arranged to straddle the axle, supporting the valve above it. Claims have been allowed on a patent to John W. Mathews, R. F. D. No. 2, Macon, Missouri.

Motor Sleeping Device

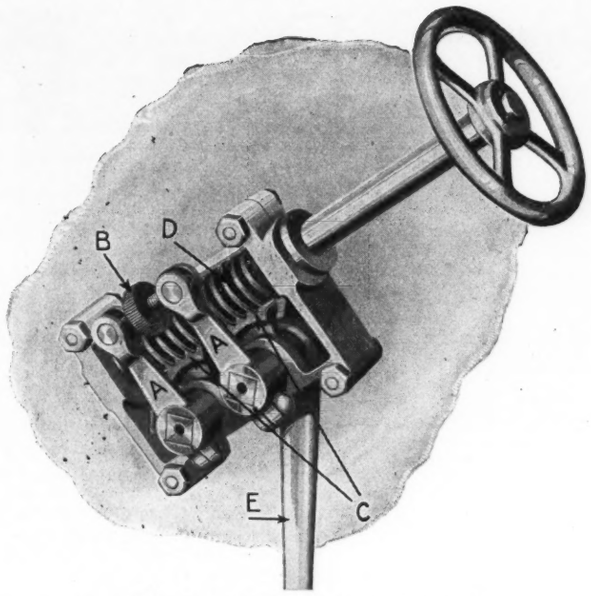
The Schilling auto-camp is a sleeping equipment, the roof of which is a continuation with the top of the car. The combination permits that the tonneau of the car be used as a dressing room. A collapsible bed is attached to the running board, so



Safety signal worn on the hand



Folding camping bed, the roof of which joins with the motor car top



Adjustable worm and sector steering gear

that the passengers may step from the car to the bed—all under one roof. The mattress fabric is made of flexible spring that will not only roll up into a small space, but will not sag as is the case with canvas. The sleeping portion of the bed is 48 inches wide and 78 inches long. The frame is constructed of metal capped wooden bars and angle iron and so swiveled to the running board plate that any up or down movement of the tonneau will not effect it. The shelter top is of 12-ounce khaki and is secured to the side rails of the bed, while the bow which extends to the outer edge of the top is thrust out by tension springs, thus keeping the top taut. The bed, collapsed, measures 8 inches by 9 inches and is 51 inches long. The weight complete, with shelter top, is 70 pounds. The price complete with shelter top is $38; without top, $30. The L. F. Schilling Co., St. Joseph, Mo.

Nodaz Headlight Dimmers

The headlights are dimmed by means of an electrically-operated translucent yellow shutter made in sections and installed in the headlight. When closed, these shutters appear as narrow strips, permitting the searchlight beam of light to shine unrestricted. Pressure on a push button near the driver's hand opens the shutters, causing the beams of light to pass through the translucent yellow material. Though giving a good driving light, and a strong light at both sides of the road, glare is prevented, it is said. This company also makes a small rheostat for dimming headlights. Ward Leonard Electric Co., Bronxville, N. Y. Price, $10.

Worm and Sector Steering

An adjustable steering head of the worm and sector type, in which all lost motion or back lash may readily be taken up, is the invention of V. M. Moore, 5046 Lakeside avenue, Cleveland O. In the cut, AA represents two parallel levers rigidly connected with the shafts of the sectors C. These sectors engage with the worm D, and are operated by it. The right and left threaded locking screw B serves to either draw the levers AA together or to separate them. By this means the teeth of the sectors may always be kept in contact with the worm, thereby preventing lost motion. When the levers are drawn together the wear comes on one side of the teeth, and when thrown apart the wear comes on the opposite side. By the use of two sectors, twice the number of teeth in the gears and twice the number of threads of the worm are brought into play, as in the ordinary type.

Safety Signal on Hand

An electric hand lamp to make the extended hand of the driver an effective signal at night has been designed by the Pittsburgh Electric Specialties Co., Pittsburgh, Pa. It is called the safety first hand signal and is worn over the driver's signalling hand, the elastic surrounding the four fingers. Current is taken from one of the light leads, the horn, or the nearest available wire, through a fine silk cord. The cord connects to a socket in the dash board. The lamp is two-candlepower and is enclosed in a polished-nickel case, three inches in diameter and one inch thick. It is provided with a ruby bull's-eye, which is surrounded by the words safety first. The retail price is $2.

New Marathon Tire

The Marathon runner tread is the new tire just brought out by the Marathon Tire and Rubber Co. The ribs and grooves are designed to eliminate suction, reduce sideslipping and add to the speed and endurance. Fabric tires are furnished with the white tread and elastic casings with the black tread. Both types are guaranteed on a basis of 5,000 miles service.

Reflector Diffuses Light

A reflector designed to throw all of the light through a clear glass and still not create the glare of a parabolic reflector is the invention of E. F. Wiederholdt, St. Louis, Mo. The main object of the invention is to provide a reflector that will throw the rays from the source of light forwardly, downwardly and laterally, the reflector being so designed that none of the rays will project upwardly into a higher horizontal plane in which the reflector lies. No rays are thrown above the level of the headlight. The upper portion of the reflector is concaved, semi-parabolic shaped, much after the shape of standard headlight reflectors. The lower portion comprises two vertically disposed reflecting surfaces, arranged at an angle to each other so that they form a V-shaped reflecting portion. The lighting unit is arranged at the apex of the V-shaped portion of the reflector and in proximity to the point where the other end of the apex of that portion merges into the upper portion of the reflector.

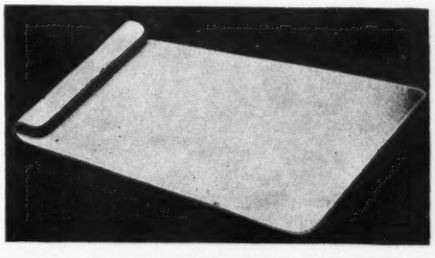
Marsh Automotor Perfector

This device consists in connecting the overflow pipe of the radiator through a combination and three-way spring check or compensating valve, to the manifold intake above the carbureter. It is operated by a rod leading to the dash. By turning the plug of the valve, air can be drawn from the radiator interior, or from the outside, or from both sources at the same time, or cut out entirely as conditions require. The radiator connection is to obtain water vapor to stimulate combustion in the motor. When alcohol is used for winter driving, it is claimed that the vapor from this liquid will still further assist combustion. The spring check is to prevent water from entering the motor when the motor is not running. The device is marketed by G. W. Marsh, 1421 Grand avenue, Piedmont, Cal.

Shovel and Jack Base

Frequently, when touring on soft roads, the need for a flat support to keep the jack from burying itself into the dirt is urgently felt. The combination auto shovel and jack base has been designed to supply this need. It is its own helper in shovelling off a flat place on the road where it may be located. It is made of heavy galvanized material, weighs 1½ pounds and is 9 inches by 6 inches in size. It is made by the Laconia Car Co., Laconia, N. H. Price, 50 cents.

New Marathon runner tread tire



Combination shovel and base for jack

Among the Makers and Dealers

POTTSTOWN, PA., Companies Unite—Potter-Mackle Co. and the North American Motor Co., Pottstown, Pa., have incorporated as the North American Motors Co.

Adds Elgin to Agency—Ben S. Williams & Son, Nashville, Tenn., have added the Elgin six to their agency. The first carload has already been received. This makes three cars for this firm, as it already sells the Monroe and Chevrolet.

Gomery-Schwartz to Build—The Gomery-Schwartz Co., Philadelphia distributor of the Hudson, has awarded the contract for the erection of a ten-story concrete building, costing about $400,000.

Winckler Returns from Europe—Page E. Winckler, formerly chief engineer for the J. I. Case Threshing Machine Co., has returned from a 6-month trip in Europe, and is now chief engineer for the Pittsburgh Model Engine Co., Pittsburgh, Pa.

Baker Heads Madison Agency—E. L. Baker of Indianapolis has been appointed president and general manager of the recently organized New Madison Sales Co., which will distribute Madison sixes in Indiana. The Madison Motors Co. of Anderson, Ind., recently was reincorporated with a capitalization of $2,000,000.

Nebraska's Car Outlook—Nebraska dealers point with pride to the wheat crop of 1916, which is expected to bring a big trade. This year's crop is worth $30,000,000 more than the 1915 crop, and the gain is expected to pay for 40,000 motor cars at an average sale price of $750 each. Other crops are of like increase.

Cutler-Hammer Employes Entertain—More than fifty employes from various departments of the Cutler-Hammer Mfg. Co., Milwaukee, Wis., took part in the seventh annual Hallowe'en entertainment. About 2,500 attended and more than $300 was cleared. The money will be used for part of the expenses of the annual Christmas party.

Swiss Magneto Co. Buys Factory—The Swiss Magneto Co., Chicago, has acquired the Elkhart Mfg. Co. buildings at Monroe, Mich., and will continue to operate the business there. The Swiss company did not feel that it could obtain satisfactorily an increase in factory and equipment at its present location in Chicago. The manufacture of the Elkhart line of high and low tension magnetos will be continued on an increased scale.

Mickam Liberty Advertising Manager—Robert W. Mickam has been appointed advertising manager of the Liberty Motor Car Co., Detroit, Mich. Mr. Mickam for 2 years has been advertising manager of the Ford Motor Co. of Canada, Ltd., and before that was in charge of the advertising department of the Ford company in Detroit.

Jenkins Company Sells—The Jenkins Machine Co., Sheboygan, Wis., has been purchased from William W. and Louis Wolff by A. G. Studeman, formerly an executive of the Falls Machine Co., Sheboygan Falls, Wis., and Mark Hoeper, until now assistant treasurer and purchasing agent of the J. I. Case Plow Co., Racine, Wis. The Jenkins company is capitalized at $70,000 and will not change its name or capital for the present.

Goodyear Co. Meets Its Managers—The Goodyear Tire and Rubber Co. factory staff met the managers of the southeastern district and their salesmen in Atlanta, Ga., last week for a 3-day convention. The program included five business sessions, a theater party, banquet and smoker. During the meeting it was announced that James E. Taylor, sales manager of the Atlanta branch, had been promoted to a place in a new department of sales promotion at the factory. Mr. Taylor had been in Atlanta 4 years and Charlotte, N. C., 3 years in Goodyear service.

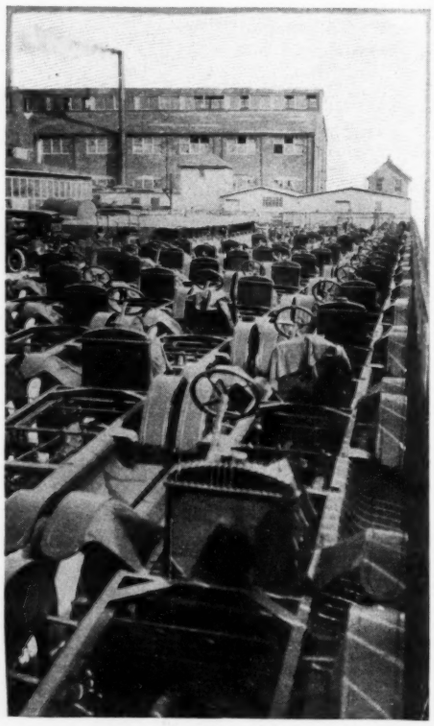
Turk Gets Promotion—T. J. Turk, chief engineer of the Inter-State Motor Co., Muncie, Ind., has been appointed assistant general manager but will continue in supervision of the engineering department.

To Sell Peerless and Redden—The Hause & Bartlett Automobile Co., Omaha, Neb., has obtained the agency for the Peerless car and Redden truck and will sell the Peerless in Nebraska and southwest Iowa and the Redden in the North Platte territory.

St. Louis Stearns Agency Reorganizes—The Stearns Motor Car Co., St. Louis, has been reorganized to handle the Stearns-Knight car. The company will be reincorporated with G. B. Self, Howard L. Austin and A. L. Walsh as chief stockholders. All new stockholders were with the former Stearns-Knight staff.

Alvin Heads Schoeneck Co.—Forrest J. Alvin, veteran of cycling and motor car days, has been elected president and general manager of the Schoeneck Co., Chicago and Harvey, Ill., manufacturer of the Geneva six. Mr. Alvin has been with the United States Motor Truck Co. at Covington, Ky., as general sales manager.

Nordyke & Marmon Co. Expands—The old brick stable for horses, a part of Nordyke & Marmon Co.'s plant at Indianapolis for almost two decades, has been converted into a new employment office and factory doctor's headquarters. This is one of the general plans for expansion, which include an addition to the assembly building erected last winter, a new heating and power plant, improvements on the original factory, new docks and an experimental building of about 4,000 square feet floor space.



COMMERCE TRUCKS FOR EXPORT—Special bodies are to be fitted to these Commerce chassis in London. They will then be forwarded to the allied armies for field use.

DeGraw to Utility Mfg. Co.—G. C. DeGraw, formerly manager of the National Sewing Machine Co., has been elected sales manager of the Utility Mfg. & Advertising Co., manufacturer of Johnson lever locks, Chicago.

Lane Gets New Office—C. L. Lane has been elected vice-president of the U. S. Light and Heat Corp., Niagara Falls, N. Y. Mr. Lane was formerly secretary.

Editor to Willys-Overland—George M. Graham, editor of the North American for 15 years, as motor car editor for 10 years, left Philadelphia November 1 to be director of research and publicity work for the Willys-Overland Co., Toledo, O.

Accessory Company to Build—The Milwaukee, Wis., Auto Specialty Co., manufacturer of parts, accessories and supplies, will build an addition, to cost about $20,000. It will be 47x100 feet in size, one story high, with provision for more stories to be added later.

Stowe Gets Promotion—C. E. Stowe has been appointed comptroller of the olds Motor Works, Lansing, Mich. Mr. Stowe was formerly auditor of the company and has been with the Oldsmobile works several years. He succeeds D. E. Edwards, who resigned.

Amazon Tire and Rubber Co. Expands—The Amazon Tire and Rubber Co., Akron, O., is erecting a four-story brick building. The factory is at present turning out about forty-five tires a day, but when the new building is completed the production will average 300 tires daily.

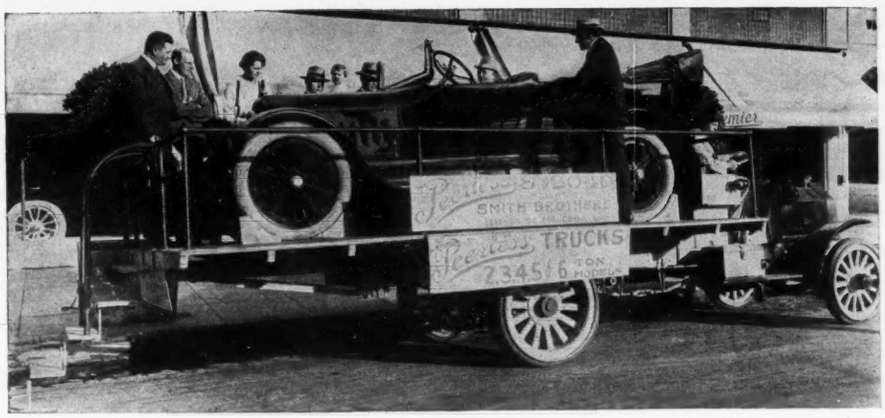
Overland at Home Exposition—Three Overland models occupied space at the Home Exposition held in Chicago recently. Vacuum cleaner, gas and electric accessories—200 home appliances in all—and the Overland formed the display. The Overland Motor Co., the Chicago agency, had the only car exhibit.

Agnew Heads Chalmers Advertising—W. L. Agnew, who resigned as advertising manager of the Hudson Motor Car Co. some months ago to become assistant manager of the sales promotion department for the Chalmers Motor Co., has been made advertising and publicity director of the Chalmers organization.

Engel to Manage Olds Sales Promotion—J. W. Engel has been appointed manager of the sales promotion department of the Olds Motor Works, Lansing, Mich. Mr. Engel is the originator of an extensively used national system for gathering reports on dealers and before entering the motor car field was in newspaper work.

New Wage System for Women—All women employes of the Milwaukee, Wis., plant of the Ford Motor Co. have been placed on the same basis of wages and salary as the men employes, according to announcement made by A. W. L. Gilpin, branch manager. To be eligible for men's pay, the women employes must be 21 years of age. All those at Milwaukee fill this requirement.

Bosch Co. Expands Again—The Bosch Magneto Co., which recently started a second addition on its Springfield, Ill., works, has purchased a plot of ground in Chicago, on which it will build a new branch building. The present Chicago location will be vacated about the first of December. Nearly 15,000 square feet will be provided. This is about two and a half times as much



PEERLESS EXHIBITION STUNT—On arrival of the new model Peerless eight in Los Angeles, Smith Bros., the Southern California representative, mounted it on a platform on a truck of the same manufacture. Those desiring to inspect the car could walk entirely around it. In this way, the car was taken to surrounding cities for a day's exhibition in each.

space as is now available, and five times as many cars as now can be accommodated in the new installation department.

Pathfinder Agency Organizes—The Garwood Motor Car Co., Cleveland, O., has been organized to distribute Pathfinder twelve-cylinder cars in northern Ohio.

Baldwin Joins Saxon Corp.—G. O. Baldwin has been appointed service manager of the Saxon Motor Car Corp. Mr. Baldwin was formerly connected with the service department of the Studebaker Corp.

Dodge to Build Additional Factory—Permit has been given to Dodge Bros. for erecting an additional factory to cost $300,000 in Detroit. The building will be used as a warehouse and will be 310 by 118 feet.

Gerlinger Sells Tacoma Plant—The Gerlinger Motor Car Co., Tacoma, Wash., has sold its factory in that city and is erecting a three-story building in Portland, Ore. The Tacoma plant was sold to the Gersix Motor Truck Co.

Stickels Heads Holt-Welles Co.—E. H. Stickels has been elected president of the Holt-Welles Co., Inc., New York City, manufacturer of the Branford and Brown carburetors. The other officers are: Vice-president and counsel, F. E. Hamilton; secretary, Paul Welles; treasurer, Calvert Holt; assistant secretary and treasurer, William M. Williams.

Billings & Spencer New Stock—Shareholders of the Billings & Spencer Co., Hartford, Conn., have authorized the issue of 10,000 shares of stock, and holders of record last Saturday have the privilege of subscribing for 10,000 shares of unissued stock at par, $25 per share, on or before November 18 at the rate of one new share for every two shares now held.

Will Make Auto Truck Bodies—H. A. DeHart, a long established wagon builder of Thoroughfare, N. J., has added motor truck bodies to his line. DeHart is best known as builder of the big vans in which South Jersey truck farmers cart their product to Philadelphia markets, and the buying of motor trucks by most of these truckers has caused him to make motor equipment an important part of his business.

Gillette Safety Tire Co. Delayed—The Gillette Safety Tire Co., Eau Claire, Wis., will not be able to commence operations in its new plant until December 1, as labor troubles at Akron, O., have delayed the completion of the factory and tire manufacturing equipment. The original plan was to start production July 1. The date then was deferred to October 1, but further delays were encountered in getting the equipment. The buildings are complete and the installation of machinery began shortly after November 1.

Gordon Heads Association—J. P. Gordon, president of the J. P. Gordon Co., has been elected president of the Ohio Automobile Trade Association.

Memphis Dealers Organize—The Memphis Automobile Dealers' Association has been organized with the following officers: President, Owen Lilly of the Lilly Carriage Co., Pierce-Arrow distributor; vice-president, G. F. Schlecht of the Schlecht Motor Sales Co., Dodge distributor; secretary and treasurer, Thomas H. Smart of the Memphis Overland Co.

Brinkmann Motor Co. Withdraws—The Weber Implement and Automobile Co., St. Louis, Mo., has taken the Maxwell agency, and the Brinkmann Motor Car Co., the former agent, has withdrawn from business.

Buys Tractor Demonstration Farm—The Bullock Tractor Co., Detroit, Mich., has secured 2,000 acres of land in Schoolcraft county, Mich., and will demonstrate tractors in farming operations. Practically all the work on the farm will be done by motor power.

Harroun Company Has New Orders—The Harroun Motors Corp., Detroit, according to officials, already have signed applications for more than 50,000 cars from dealers throughout the United States. In addition more than $1,000,000 worth of cars have been contracted for export.

Accessories Co. Opens Plant—The Auto Specialties Co., which has been located at Joliet, Ill., has absorbed the Michigan Malleable Co. and is opening a factory at St. Joseph, Mich. The company will occupy two buildings with approximately 75,000 feet of floor space.

Buick Milwaukee Plan—The Buick Motor Co. has discontinued the sale of cars at retail in Milwaukee and has placed the agency for Buick cars with the West Side Buick Co., which has rented a new building and will distribute under E. M. Jordan, formerly connected with the Buick Motor Co.

Smalley Gets Promotion—George O. Smalley has been promoted to be first vice-president and general manager of the Bound Brook Oil-less Bearing Co., succeeding the late Leigh S. Bache. Mr. Smalley has been connected with this company for 10 years, for the last 4 years as assistant general manager and assistant treasurer.

Harroun Starts Building—The Harroun Motors Corp., Detroit, Mich., has broken ground for its first building in Wayne county. The structure will be 550 by 75 feet, two stories high, and will have a wing of sawtooth construction, 140 by 600 feet and one story high. Both buildings will be built of brick and steel.

Punctureless Co. Expands—To take care of factory expansion, the Punctureless Auto Tire Co., Akron, O., has called a meeting of the stockholders for December 25 to vote on an increase in capitalization from $100,000 to $1,000,000. An additional five-story building will be erected. Plants are now being operated at Kenmore and Millersburg. Twenty-five men are employed and the working force will be increased to 100 within a month.

Auto Wheel Co. Increases Capital—The Auto Wheel Co., Lansing, Mich., has increased its common stock capitalization from $300,000 to $500,000. The issue was authorized by the directors at the annual meeting of the board October 24. The funds derived from the increase will be devoted to new buildings. Officers of the company remain the same and include E. S. Porter, president; Harry E. Bradner, vice-president; Drury L. Porter, secretary and treasurer, and John Winters, superintendent.

Four-Wheel Drive Co. Expands—The Four-Wheel Drive Auto. Co., Clintonville, Wis., has increased its production to four trucks per day, and by January 1 it is expected that sufficient new equipment and tools will have been delivered to make possible an output of six trucks each day. The company has a standing order for twenty cars daily for export, but the domestic demand is increasing faster than the factory can handle it. At this time new machinery, costing $20,000, is being purchased to equip additions and extensions now being rushed to completion.

Increases in Capital

Peru Auto Parts Mfg. Co.—The Peru Auto Parts Mfg. Co., Peru, Ind., has increased its capital from $200,000 to $500,000.

Economy Motor Co.—The Economy Motor Co., Tiffin, O., has increased its capital from $25,000 to $150,000.

Continental Auto Top Mfg. Co.—The Continental Auto Top Mfg. Co., St. Louis, has doubled its capital stock.

Metal Auto Parts Co.—The Metal Auto Parts Co., Connersville, Ind., has increased its capital from $50,000 to $150,000.

Dividends Declared

B. F. Goodrich Co.—The B. F. Goodrich Co., Akron, O., has declared a dividend of $1.75 per share on preferred, payable January 2, 1917, to stock of record December 21, 1916, and a regular quarterly dividend of $1 per share on common stock, payable February 15, 1917, on stock of record February 2, 1917.

Yale & Towne Mfg. Co.—The Yale & Towne Mfg. Co., New York City, has declared an extra dividend of 5 per cent payable November 10 to stock of record November 3.

Lee Rubber and Tire Co.—The Lee Rubber and Tire Co., Conshohocken, Pa., has declared a quarterly dividend of 50 cents a share and an extra dividend of 25 cents a share, payable December 1 to stock of record November 15.

Westinghouse Electric and Mfg. Co.—The Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., has declared a quarterly dividend of 1½ per cent, 75 percent a share on common for the quarter ending September 30, payable October 31 to stock of record October 6.

From the Four Winds

NORTHWESTERN Ferry to Continue—Hoven's Ferry, running across the Columbia river between the states of Oregon and Washington, will be operated all winter, and motorists have been notified that machines will be taken over one at a time for $2.50 per trip.

Says Car Isn't Asset—A motor car cannot be carried on the books of state banks and trust companies as an asset, according to the state banking board of North Dakota. It has filed its report with the secretary of the state.

Philadelphia Rounds Up Gang—The Philadelphia police department has rounded up a gang of alleged motor thieves who have been operating in this city for some time. The arrests were made after arrangements by detectives for the purchase of a number of stolen cars. These men are believed to be responsible for the theft of more than 1,800 cars since the beginning of the year.

Jersey Gas Pumps Not Swindlers—The statement of officials of the federal bureau of standards to the effect that most gasoline pumps were swindlers and were mulcting motorists of millions of dollars a year is roundly condemned by Jersey officials and dealers, because Jersey pumps are tested and sealed, short measure being heavily punished.

Pennsylvania Registration—October 30 the Pennsylvania state highway department had received $2,301,240 in license money. For the entire 12 months of 1915 the amount received was $1,650,000. The new 1917 licenses will be ready for distribution in a few weeks. The governor will have license No. 1. Odd requests have been made for numbers, among which are 7, 77, 777, 13 and 23.

Reserve Tables for Motorists—A new wrinkle in church supper management bids fair to make country church suppers much more profitable than formerly. Rural churches in southern New Jersey are noted for their oyster suppers, and committees in charge have started the practice of advertising that they will reserve tables for out-of-town motoring parties. The plan has met with much success.

Jersey Oil Prospects Brighten—Boring for oil on the property of Lewis Steelman, Millville, N. J., has now reached a depth of 900 feet and the bringing to the surface of gases from this depth give strong encouragement to the drillers. At 800 feet bits of sea shell and other evidence of submarine life were brought up, and it is expected that rock will be struck within 1,000 feet, the oil probably lying just below this stratum.

This Waltz Floor Is Paved—A stretch of paved highway near Ontario, Cal., is so slippery when damp and the antics of motor cars thereon are so erratic that it has been termed "the Devil's waltz floor." On a recent morning before the sun had dispelled the haze, four cars were in collision almost simultaneously. One plunged against a telegraph pole on which a lineman was at work, completely severing it. It is now proposed to put down a special paving to prevent cars from skidding.

Goggles Bring Militia's Thanks — The Worcester, Mass., Automobile Club and the Worcester Automobile Dealers' Association have received letters of thanks from the militia companies of that city who have just returned from duty on the border for their kindness in sending to the soldiers motor goggles which proved very valuable in saving eyes from the blinding dust and glare. Secretary Oliver P. Tyler of the club conceived the idea, and when he put it up to the club members and the dealers he received a very gratifying response.

Recognizes Increase in Thefts—The St. Louis police department has recognized the increase of motor car thefts by assigning another team of detectives to this duty. They will have a car.

St. Louis Owners to Court—The traffic policemen of St. Louis one night last week checked up the lights on all motor cars, and sent fifty-three owners to court the next morning. About half were cited for failure to have tail lights. The others were cited as violators of the rule that the bright shaft from the headlights must not be more than 36 inches above the ground at 75 feet in front of the machine.

Good Roads Activities

Washington Association to Meet — The Washington State Good Roads Association will meet at Centralia, Wash., November 16 and 17. Hundreds of delegates from all parts of the state will be in attendance and will be taken over the new 17-mile paved road between Thurston county and Chehalis county.

Coming Motor Events

RACES

—1916—

***November 16—Vanderbilt cup race, Santa Monica, Cal.**
***November 18—Grand prize race, Santa Monica, Cal**
***November 30—Speedway, Los Angeles, Cal.**
***December 25—Speedway, Los Angeles, Cal.**

—1917—

May 19—Metropolitan Trophy, New York speedway.
†May 30—Indianapolis speedway.
†June 9—Chicago speedway.
June 23—Cincinnati speedway
†July 4—Omaha speedway.
†July 14—Des Moines speedway.
†July 28—Tacoma speedway.
August 4—Kansas City speedway.
†September 3—Cincinnati speedway.
†September 15—Providence speedway.
†September 29—New York speedway.
October 6—Kansas City speedway.
October 13—Chicago speedway.
October 27—New York speedway.

*** Sanctioned by A. A. A.**
† A. A. A. championship events for 1917.

MEETINGS

January 9-11—Mid-winter meeting, Society of Automobile Engineers.

SHOWS

December 18-20—San Francisco show.
January 6-13—New York show.
January 13-20—Montreal.
January 22-27—Rochester, N. Y., show.
January 27-February 3—Chicago show.
February 18-25—St. Louis, Mo., show.
February 19-24—Des Moines, Ia., show.
February 26-March 3—Omaha, Neb., show.
March 3-10—Boston.
March 6-10—Fort Dodge, Ia., show.

Alabama Association to Meet—The twentieth annual convention of the Alabama Good Roads Association will meet at Birmingham, Ala., November 15. A special effort is being made to obtain a large attendance of newly elected probate judges, who practically control road work in the state. John Graft is president of the state association.

Import Many Negroes for Highway Work—The vast amount of road improvement that is being accomplished in New Jersey has forced the importation of negro labor from the South. Munitions and other work have taken most of the available labor, and it is said that more than 10,000 Southern negroes have been brought north in the past few months, many of these going into New Jersey.

Oregon Highway Hard Job—The new highway between Gardiner and Last Gardiner in Oregon proved a most exacting piece of road work, since the highway skirts the north bank of the river for 1¾ miles and traverses some exceedingly rugged localities. To construct this highway the builder found it necessary to use pile-drivers and dredges and a bucket dredge. The work was completed at a cost of $26,000.

New Zealand Wants Concrete Roads—The local and national authorities in New Zealand are studying the subject of good roads as they are in the United States with a view to the construction of concrete roads. They estimate a mile of 12-foot concrete road could be built for $2,000 more than a mile of stone and that the saving in upkeep would be $1,200 a mile in the first 5 years, while at the end of 10 years there would be a saving of $7,000 or $8,000. A good grade of cement is made in New Zealand, and as there are no severe frosts in the country, it is planned to make the road 4 inches thick as in California.

Plan for $30,000 Scenic Road—Officials of the national forests of the west met recently to form tentative plans for a motor car road of 7 per cent grade up Mount Timpanogos, near Provo, Utah, for about $30,000. The work is expected to begin in April. The road will pass through American Fork canyon to the mouth of Mill Creek canyon, then south to Aspen grove and down Provo canyon to the Provo and North Fork and up Mount Timpanogos to the glacier base. The course lies within the Wasatch National forest, which makes an appropriation for its construction available from the Shackelford bill.

Minnesota Active for Highway—To construct the Twin City-Duluth section of the National Capital highway the three cities are engaged in a strenuous campaign such as has not been witnessed in Minnesota before. Each of the three cities is to raise $10,000, the total to insure $80,000 federal aid, together with $50,000 from Pine county and the state road tax. The route will be by way of Pine City, Hinckley and Moose Lake, 150 miles, to connect at Duluth with the 175-mile North Shore road along Lake Superior to Pigeon River, Minn., and from that point over the smooth Canadian road to Port Arthur. From the Iowa-Minnesota line to Pigeon River, Minn., will be 500 miles of fine touring road. In Duluth cars are being tagged to raise the money. The St. Paul Association of Commerce, the Minneapolis Automobile Club and Real Estate Board are interested. The latter will suggest application of the state inheritance tax of $2,000,000 on the James J. Hill estate to road purposes.